# The AMERICAN HOROLOGIST

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# THE AMERICAN HOROLOGIST

*Official National Publication of the United Horological Association of America, Inc., and Its Affiliates*

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To inculcate the principles of the U. H. A. of A., fraternal and commercial advancement; to promote the welfare and enhance the betterment of its members; to cultivate good fellowship and a higher degree of knowledge in Horology; to be sent free monthly to all members. National membership, $2.00 per year. Make application to nearest secretary or representative. Addresses can be secured in the NATIONAL AND LOCAL INFORMATION column in this issue.

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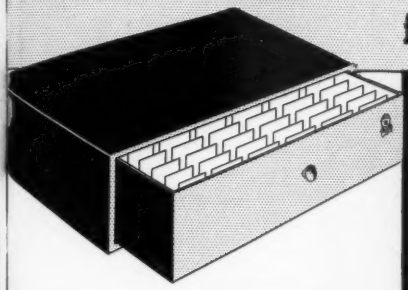

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# Overcoiling and Finishing

By H. L. BEEHLER,
Representative, Hamilton Watch Company, Lancaster, Pa.;
First Vice-Pres. Horological Institute of America.

MR. PRESIDENT, members and guests of the United Horological Association of America, I feel highly honored for the opportunity to co-operate with this fine organization in your efforts to elevate the watchmaking profession.

For the past 16 years I have been in close contact with the major activities of the various Horological Guilds and Societies and it is my opinion that the officers and members of the United Horological Association of America are making a great contribution to the present and future welfare of all watchmakers.

I am glad to bring you the good will and best wishes of the Hamilton Watch Company, of Lancaster, Pa., in appreciation of your efforts to elevate and dignify our profession.

## Overcoiling

Overcoils are formed on hairsprings so that closer isochronal rates may be obtained than is possible with a "Flat Hairspring."

An isochronal balance unit (balance wheel, hairspring and roller, complete) is one that will have the same (period) in the high that it has in the low arcs of motion.

In order that a balance and hairspring unit shall possess this quality of isochronism it is necessary that the torque on the balance staff shall at all times be directly proportional to the angle through which the balance turns. This statement can be more readily understood by a study of Figure H-560.

It is assumed here that the balance wheel is properly mounted in the plates and jewels of a watch. The pallet has been removed so that the balance is permitted to come to rest with the hairspring unstressed and the center of the jewel pin directly on the line of centers of the escape, pallet and balance jewel holes. In Figure H-560, the balance arm is pointing to the zero position.

Let us now assume that the balance wheel is manually turned so that the balance arm is moved through an angle of 1° which winds up the hairspring, and thereby places a torque on the balance staff, let us say of .01 gram centimeter. Now let us further assume that the balance wheel is forcibly moved through angles of 2°, 3° and successively on up to 270°.

If the torque on the balance staff increases in direct proportion to the angle through which the balance is turned, there will be a torque of .02 gram centimeter at 2°; .03 gram centimeter at 3°; and 2.7 gram centimeter at 270°.

Figure H-561 shows that with *flat* hairspring the above assumptions are not true, but that as soon as the balance wheel is moved through angles of 10°, 20° and so on up to 270°, that the eccentric motion of the spring tends to force the balance pivots away from the stud during the winding up process and toward the stud during the unwinding process. The equal torque is, therefore, disturbed by the friction on the staff due to the radial thrust of the spring.

Abraham Louis Breguet conceived the idea to bend the outside coil up and lay it over the top of the main portion of the flat spiral, with the idea in mind of permitting the entire spring to wind and unwind more concentrically.

It was found by practical experiment that a spring equipped with an "overcoil" of this type actually permitted the spring to remain more central during the vibrations of the balance wheel and thereby decreased the isochronal error.

Figure H-560 shows the result of a spring fitted with an overcoil. Here we are able to visualize that during the winding and unwinding of the spring that the torque on the balance staff will conform more closely to the conditions established in the beginning of this article; therefore, more perfect isochronism will result.

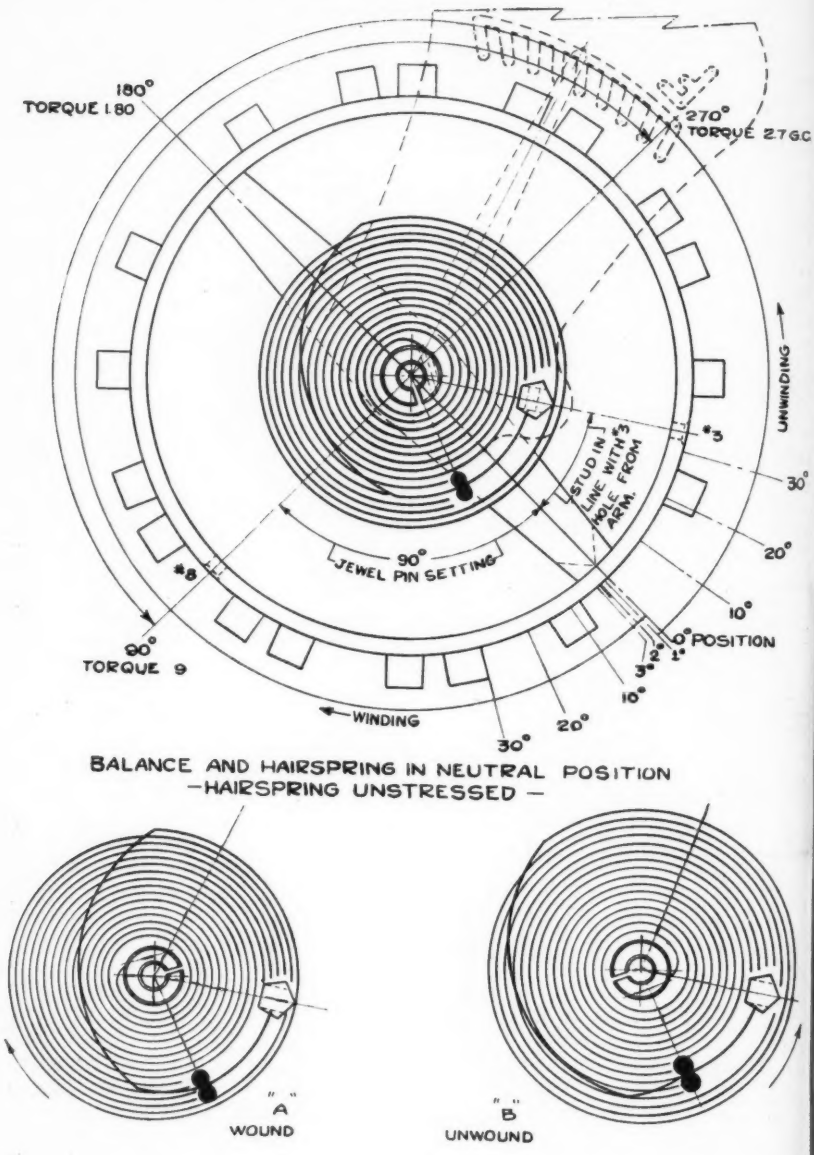
180°
TORQUE 1.80
270°
TORQUE 2.76C
UNWINDING
#3
30°
20°
10°
0° POSITION
STUD IN LINE WITH #3 HOLE FROM ARM.
90°
JEWEL PIN SETTING
#8
90°
TORQUE 9
WINDING
30°
20°
10°
3°
2°
1°
BALANCE AND HAIRSPRING IN NEUTRAL POSITION
—HAIRSPRING UNSTRESSED—
"A"
WOUND
"B"
UNWOUND

Figure H-560

The main purpose of this article is to describe and lay down rules for the manipulation of the spring so that overcoils may be bent up that will satisfy practical requirements.

We make no claim concerning the absolute theoretical correctness of the form of overcoil presented here, nor do we wish to infer that it is possible to present a perfect isochronal overcoil. For practical watchmaker's working in a field where overcoils of every description are encountered, it becomes necessary to be able to:

First. Form complete new overcoils.

Second. Reshape bent and distorted overcoils so that they may function as originally intended.

Third. Reshape bent and distorted overcoils so that the spring may satisfy the conditions of proper height and correct centering.

After the hairspring has been pinned to the collet, and trued in the round and flat, it must be "vibrated" to the balance wheel. (See article on "Vibrating Hairsprings.")

### Forming the Overcoil

Referring to Figure H-562, we can see that the overcoil starts to rise at point "A" and from "A" to "B" it remains parallel with the adjacent coil 13. At "B" the spring starts to bend inward forming the coil BCG.

The actual operations required to establish the conditions shown in Figure H-562, are:

First. Grasp the spring at "A" with a pair of good quality Dumont tweezers. (Left hand.)

Second. Grasp the spring at "A" with a second pair of Dumont tweezers.

Third. Hold the left hand tweezers rigid in a vertical position so that the spring will lay flat on the bench.

Fourth. Bend the spring upward with the tweezers in the right hand. It will be observed that the spring at "B" must be raised to the proper height for the finished overcoil. This will require judg-

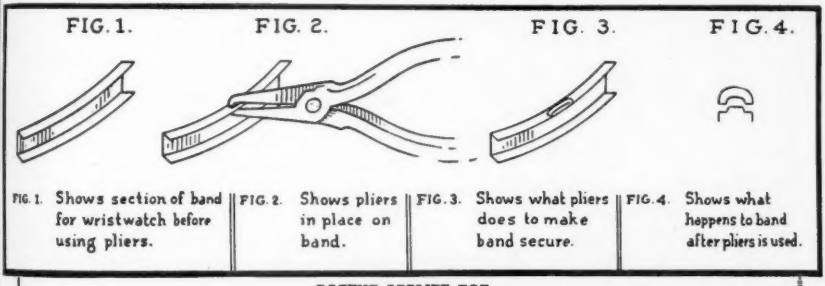


FIG. 1. Shows section of band for wristwatch before using pliers.

FIG. 2. Shows pliers in place on band.

FIG. 3. Shows what pliers does to make band secure.

FIG. 4. Shows what happens to band after pliers is used.

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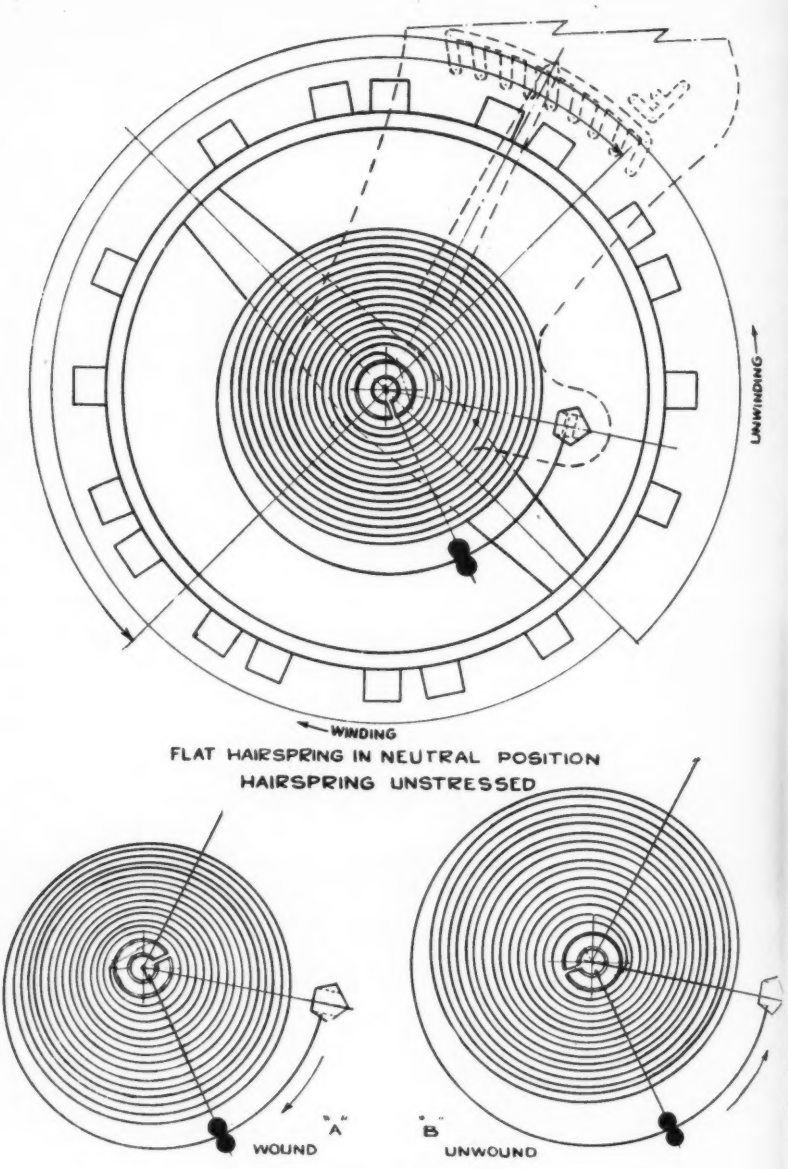
UNWINDING
WINDING
FLAT HAIRSPRING IN NEUTRAL POSITION
HAIRSPRING UNSTRESSED
"A"
"B"
WOUND
UNWOUND

Figure H-561

ment and skill in making the first bend.

Fifth. When "B" has been raised to the proper height, it will be necessary to bend the part BC'G' downward so that it will be parallel with the main body of the spring.

Sixth. The overcoil must now be bent inward so as to form curve BC. This is accomplished by the use of a pair of overcoiling tweezers. Grasp the spring at "B" with a pair of Dumont overcoiling tweezers 10-1 and squeeze the tweezers so that BC'G' will cross the vertical line "J" at a point slightly beyond the 7th coil counting from the outside, as shown at "H". No bending is permitted between the two points "B" and "C", because this curve has the same radius as it had before it was bent inward at "B".

Seventh. The point C' will be located where line C' crosses BG. Grasp the spring at this point with the overcoiling tweezer and bend the remaining part of the overcoil inward. The radius of CG is located on the balance staff, therefore, this curve must be concentric with the staff, and must be reformed with the overcoiling tweezers to lay between the 5th and 6th coils.

The overcoil must rise gradually from "A" to "B" and from "B" to "G" it must be approximately .014 thousandths of an inch above the main spiral portion of the spring and the same height at all points.

## Finishing

The actual work of finishing consists of the following operations:

(a) Fitting stud and balance unit to balance cock.
(b) Endshaking balance wheel.
(c) Leveling overcoil.
(d) Leveling hairspring.
(e) Centering hairspring.
(f) Circling overcoil.
(g) Vibrating overcoil between regulator pins.
(h) Test motion.

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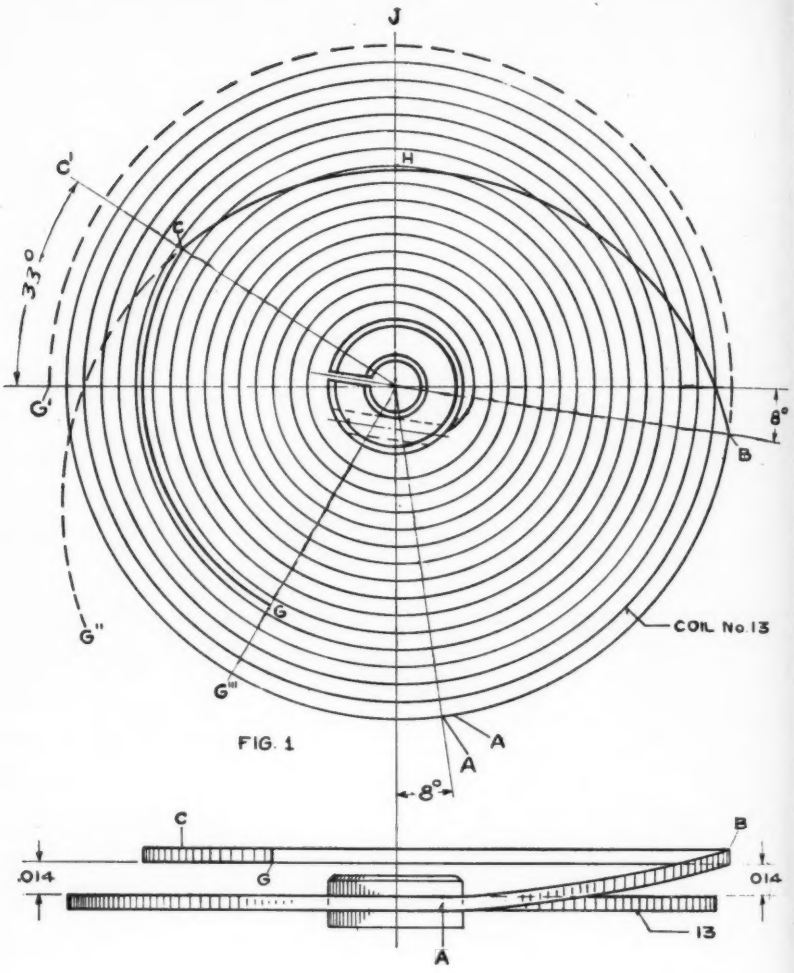


FIG. 1

FIG. 1A

## SKETCH SHOWING WHERE TO BEND SPRING TO FORM OVERCOIL

**Figure H-562**

Requirements covering the above operations are:

(a) Usually the top of stud must be flush with the top balance cock.

(b) Balance staff endshake must be as short as possible—insuring freedom at all times.

(c) The hairspring overcoil must be level and at right angles to the balance cock from the stud to point B. Generally

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## Is . . .

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speaking, it should also be as far away from the balance cock as it is from the body of the spring, or half way between the spring and balance cock.

Before proceeding with explanatory remarks concerning the various manipulative operations of finishing, it may be well to assume certain conditions as the following:

1. That all overcoils are laid correctly, as shown in Figure H563 so that the entire coil from B to G is the correct distance above the spiral and the correct distance away from the balance center.

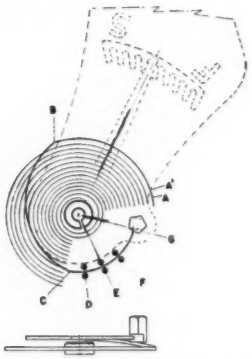
B
A'
A
G
F
C
D
E
E=REGULATOR PINS WITH REGULATOR ON CENTER
F= " " " " " TO SLOW
D= " " " " " FAST
OVERCOIL MUST BE IN CENTER OF REGULATOR PINS AT ALL POINTS FROM FAST TO SLOW. WHEN THIS CONDITION IS ESTABLISHED THE OVERCOIL IS CIRCLED AND THE SPRING VIBRATES EQUALLY BETWEEN THE PINS
HAIRSPRING COMPLETE WITH COLLET, STUD & OVERCOIL

**Fig. H-563**

2. That the studs are fitted at perfect right angles to the overcoil.

3. That the regulator pins are correctly located so that the distance from the balance center to center of regulator pins is identically the same as the distance from balance center to the overcoil. (Part G-C.)

4. That all stud holes in the balance cock are located the correct distance from the balance center.

5. That all stud holes in the stud are properly located.

Then—the operation of finishing will become merely one of putting the balance and hairspring in the watch.

Therefore, all of the details of finishing are a direct result of:

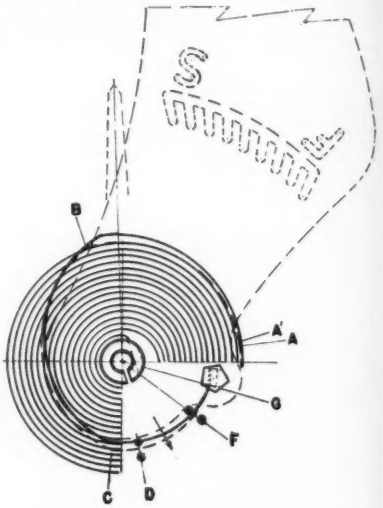


**Fig. H-564**
**Sketch Showing Overcoil Bent Towards Balance Staff. Arrow Shows Direction Overcoil Must Be Bent to Correct**

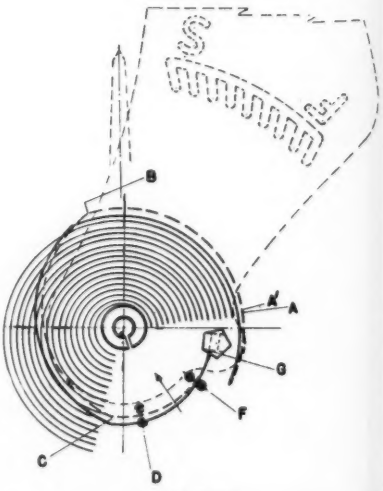


**Fig. H-565**
**Sketch Showing Overcoil Bent Away From Balance Staff. Arrow Shows Direction Overcoil Must Be Bent to Correct**

1. Studs improperly located on spring.
(a) Not at right angles to spring.
(b) Hairsprings bent at point (G) causing conditions shown in sketches Nos. 564 and 565.
2. Overcoils too high or low.
3. Variation in the height of overcoils.
4. Radius from balance center to points G, F, E, D, C more or less than the required standard.
5. Radius from balance center to center of regulator pins more or less than required standard.

(d) The spiral portion or body of the spring starts at A and must be level, and at right angles to the balance wheel and balance cock.

(e) The entire spiral portion of the hairspring must be centered, therefore the spaces between all coils must be equal.

(f) The overcoil is designed and formed so when properly located to the stud and the stud fitted to the cock, that the portion C-G will conform to the

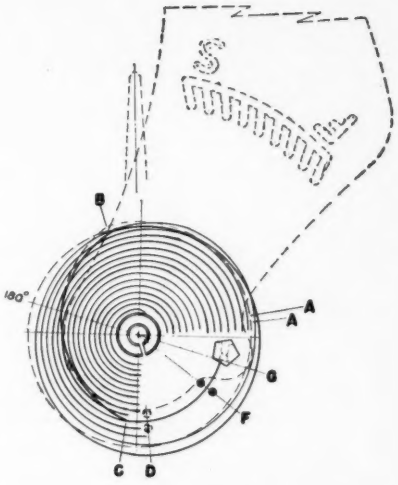


Fig. H-566

**Sketch Showing Overcoil Bent 180° From Stud, Bending Point "B" Towards Staff**

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curve made by the regulator pins in moving from F to D. This portion of the overcoil C-G must also be located in the middle of both regulator pins, and remain in this position for any location of the regulator pin.

(g) The overcoil C-G must be located directly in the center of the regulator pins, and be so perfectly circled that as

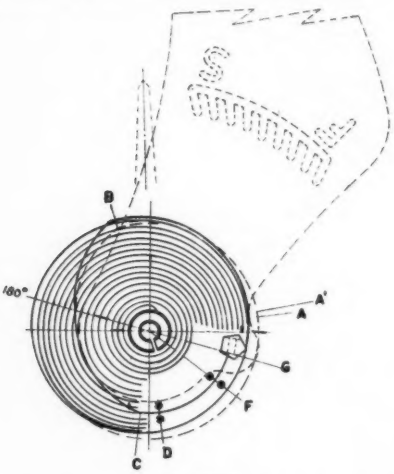


**Fig. H-567**
**Sketch Showing Overcoil Bent 180° From Stud, Bending Point "B" Away From Staff**

the regulator pins are moved from F to D that the portion C-G will remain perfectly stationary, not moving either towards or away from the balance staff.

(h) The motion should be 1½ turns in the flat position and 1¼ turns in the edge position.

## Rules for Finishing

A consideration of the stated hairspring errors and the method of correction.

Sketch H564 shows the overcoil bent towards the balance staff. This is a direct result of a bend at point G. When the stud is placed in balance cock the overcoil should conform to the conditions shown in H563, but because of the bend at G, the overcoil will gradually curve inward towards the balance staff. The

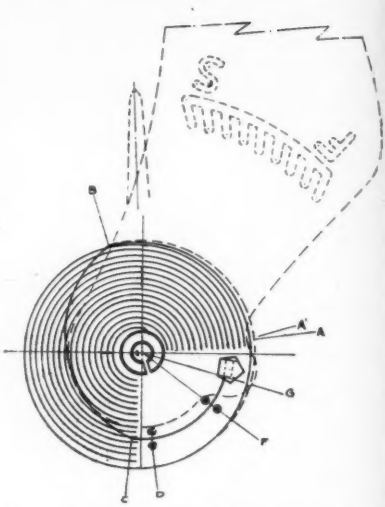


**Fig. H-568**
**Sketch Showing Overcoil Bent at Point "B"—Taking Point "A" Towards Staff**

correction of this condition is known as circling the overcoil."

Inspection of the watch which reveals this condition proceeds as follows:

1. Place regulator at the "Slow" side of the balance cock, which moved the regulator pins to point "F".

2. Move regulator from "Slow" to "Fast" moving regulator pins from F to D.

As the regulator pins move from F to D, the overcoil will move away from the balance staff. This shows that the overcoil is not circled. To correct this condition move the regulator so the regulator pins will be as close to the stud as possible, then bend the overcoil in the direction of the arrow. Repeat the operation of moving the regulator from "Slow" to "Fast" and again observe the overcoil to determine if it remains motionless, or if it moves either towards the staff or away from the staff.

Sketch H-565 shows the overcoil bent away from the balance staff. From the explanation covering the condition in H-564 it is possible to make the following statements in reference to circling the overcoil.

1. When the overcoil moves away from the balance staff, as the regulator pins are moved away from the stud, then it is necessary to bend the overcoil away from the staff to correct the error. H-564.

2. When the overcoil moves towards the staff, as the regulator pins are moved away from the stud, then it is necessary to bend the overcoil towards the staff to correct the error. H-565.

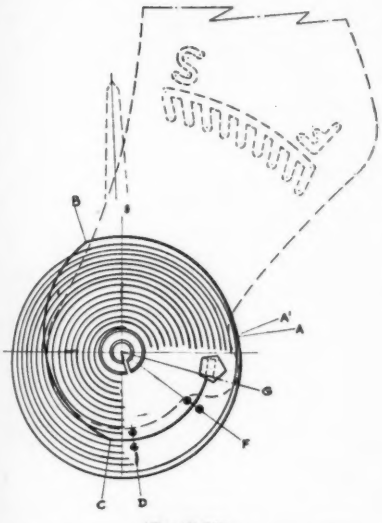


**Fig. H-569**
**Sketch Showing Overcoil Bent at Point "A"—Taking Point "B" Towards Staff**

Sketch H-566 shows the overcoil bent 180° from the stud, bending point B towards the balance staff. The overcoil C-G under this condition will no longer lay over the top of the fifth coil as shown in H-560, but depending upon the amount of bending at the point 180° from the stud the overcoil my lay over the sixth or seventh coil. All of the coils underneath the regulator pins will be wider apart than the coils underneath the balance cock and the spring will be "out of center."

The remedy for this error is to grasp the spring with a pair of good tweezers 180° from the stud and bend the overcoil in such a manner as to carry point B away from the balance staff.

Sketch H-567 is just the reverse from 566, and all of the errors and the remedy stated above will be reversed.

Sketch H-568 shows the overcoil bent at point B carrying point A towards the staff. This will cause the spring to be "out of center." The remedy is to bend the spring at point B so as to carry point A away from the staff.

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If all the sketches, H-560 to H-570, are studied carefully, keeping in mind the conditions shown in H-563 one begins to lay a mental picture of all the fundamental operations of finishing. By analyzing the effects of certain errors we arrive directly to the remedy.

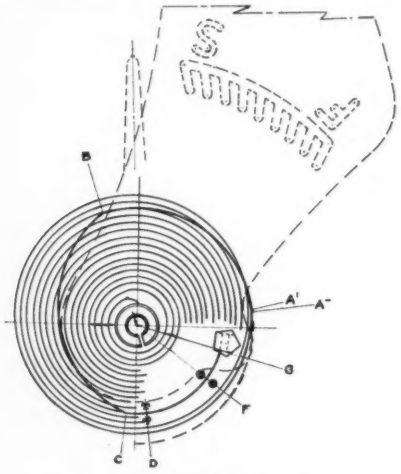


**Fig. H-570**
**Sketch Showing Overcoil Bent at Point "A"—Taking Point "B" Away From Staff**

## Analyzing the Major Errors

*Circling the Overcoil*—If the overcoil is not circled it becomes apparent at once that the spring undoubtedly was originally bent at point G. Here we have a condition similar to conditions shown in H-564 and H-565, and it is possible to vibrate the spring and circle the overcoil at the same time.

*Vibrating the Spring and Circling the Overcoil*—After the overcoil has been bent away from the balance staff as explained for sketch H-564 the regulator pins should be moved to position F. Look at the position of the overcoil between the pins, and it will probably conform to one of the following conditions:

1. Equally spaced between the pins.
2. Closer to outside pin.
3. Closer to inside pin.
4. Touching inside pin.
5. Touching outside pin.

(Note: During this operation the regulator pins should be straight.)

If the overcoil touches either the inside or outside pin, the overcoil should be bent so as to bring it more central between the pins. This then will establish one of the first three conditions named above.

Let us now assume that the overcoil is directly in the center of the two pins, make sure of this condition by stopping the balance wheel with the jewel pin in the fork slat and observe the location of the overcoil with a double eyeglass. Now move the regulator so the pins will be located at D, look at the overcoil again and decide if it still remains in the same central position between the pins. If it does, it can be seen that when the regulator pins are closed up to the spring that it will be possible to move the regulator from "Slow" to "Fast" carrying the pins from F to D without disturbing the location of the overcoil.

By this method of locating the over-

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coil in the center of the regulator pins for all points from F to D accomplishes two operations at once. That is:

1. Vibrates the spring between the regulator pins.
2. Circles the overcoil.

## Editor's Apology

To members of the National, subscribers and supporters: I wish to apologize for not being in our offices from April 23 to July 1.

Our office was closed while on tour of the states in the interest of the trade, speaking before groups who were desirous of learning the truth of watchmakers' cooperation. My travels took me to 28 states, 49 cities, and 2 foreign countries. What was accomplished is reflected in the membership rolls of U. H. A. of A. and other similiar organizations.

During my absence we managed THE AMERICAN HOROLOGIST while on tour and all association reports were printed without editing. The articles which appeared were just as received.

We shall not endeavor to make a report in this issue, but shall have our entire report ready for August issue. We feel confident the report will prove interesting and encouraging to our readers and the trade.

Our excuse for not making same now is: 3 mail sacks of accumulated mail and hundreds of new members all wishing service, to say nothing of the dozens of new associations and guilds pressing us for materials and guidance in their formation and in many cases reformation.

We trust our apparent neglect will be understood and assure you of the same proficient service of the past.—EDITOR

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# The National Convention—Another Step for Your Benefit

By HENRY PAULSON

THE National Convention of Watchmakers at Boston, May 16-18, marks another step forward for the jewlery trade and the work they are doing in your behalf will interest you.

It was a pleasure to be with the enterprising and the progressive members for this National Association of Watchmakers is carrying the banner forward for the advancement of the entire jewlery trade. And in this advanced age of scientific development, with its aeroplanes, stream-liners, and radio broadcasts from all parts of the globe, seconds take an increased importance. It is a time when the watchmaker should come into his own, with constantly increasing prosperity, for this commodity of Accurate Time is exclusively his.

Accurate Time is the distinguishing feature that separates the Retail Jeweler from all other merchants. We are all, first of all, salesmen in the measurement of time. To make the public Accurate Time conscious is our business. The greater the publicity, the greater the benefit, and what general thought could be plainer, more substantial, more beneficial or helpful in character-building, success and advancement for the public than Accurate Time. Not only is it a source of great pleasure and satisfaction to have, but it is a wonderful inspiration to anyone to know that you are impelled by accuracy.

While attending the Convention at Boston, we had the opportunity of visiting the homes of the Founders of this country, posts, soldiers, statesmen and scholars. I was impressed with the great value each seemed to place upon Accurate Time, and its vital importance. In one study there were four clocks, so that one at least would be within the range of vision. In some instances there was scarcely a room without a clock.

Is it any wonder that New England, in addition to being the Cradle of Liberty, is also the cradle of time-keeping instrument manufacturing? And who knows how much of the marvelous eminence of New Englanders may be attributed to the enterprise of our early New England horologists.

Every watchmaker should be a member of this honorable organization to further the interests of the worthy industry of which he is a member.

## So Here Is How You Benefit in Membership

First—Let it be understood that I am not a member nor eligible to membership, not being engaged in the retail business. Nor do I collect any commission for securing members.

Second—My interest for obvious reasons, is to see you more prosperous and as this organization is doing a special work in cooperating through the watchmakers, the advancement through this work must help the entire jewelry business, and is of immeasurable benefit to all. Everyone will conceive that the high standard of workmanship required by the watchmaker and jeweler is not appreciated by the public as it should be. You will agree, too, that through the right cooperation these evils may be remedied and even now are being overcome. If you wish to learn more of this work write to Orville R. Hagans, Sec'y of the United Horological Association, 3226 E. Colfax, Denver, Colorado, for full particulars.

Already marked steps of advancement are on the way. It is the coming thing. "United we stand. divided we fall." work with us.

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# Magnetism

By HAROLD C. KELLY
Member National Technical Board

MAGNETISM is an ever constant and insidious enemy to horologists. The means by which a watch may be magnetized are so numerous today that it is important that the repairman form the habit of testing every watch for magnetism that comes in for regulation, examination or repair.

Since the subject of magnetism enters into the practice of horology so prominently the workman should possess a thorough knowledge of magnetism. In this connection we suggest the reading of the chapter on magnetism as given in "Elementary Principles of Physics" by Fuller, Brownlee and Baker.

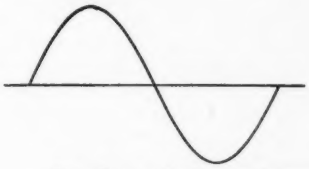
*Magnetized Tools and Watches*—And what are the horologists' problems relative to magnetism?

First, the workmans' tools are subject to being magnetized. Punches and tweezers especially should be closely watched. Avoid placing such tools in a north south position in or on the bench.

In testing a watch for magnetism place the compass not only over the balance but also over the winding wheels. The mainspring, being subject to magnetization as well as other steel parts, has definite poles at the time the magnetic lines of force passed thru the watch. These poles are split up into countless numbers as the mainspring unwinds. This constant alteration of the relative position of the poles between the mainspring, winding wheels and the balance helps to explain the erratic performance of magnetized watches.

*Theory of Demagnetization*—An alternating current is that type of electrical current which changes its direction constantly and when such current flows thru the coil of wire composing the demagnetizer the poles also change. The figure shows an alternating current wave and the complete wave is called a cycle. An alternating current of 60 such waves per second is said to have a frequency of 60 cycles.

When a piece of steel rod is inserted in the demagnetizer and the flow of electricity is suddenly cut off the steel rod will be found magnetized, its poles being that of the last half cycle sent thru the wire.



WAVE FORM OF ALTERNATING CURRENT

Now, instead of cutting off the current with the steel rod in the demagnetizer, we leave the current on and gradually withdraw the rod, same will be polarized twice for every cycle. Thus the rod is magnetized, demagnetized and remagnetized again in rapid succession while the rod is being gradually withdrawn. The result of this is that each successive polarization is weaker than the preceding one. When withdrawn entirely from the field the magnetism has disappeared.

*Demagnetizing a Watch*—The procedure in demagnetizing a watch is much the same as explained above. Withdraw the watch keeping it central with the opening and giving it a slight twist after leaving the opening. Continue the withdrawal until watch is about three feet from the demagnetizer. If the first attempt fails to remove all magnetism repeat the operation.

## Our Deepest Sympathies

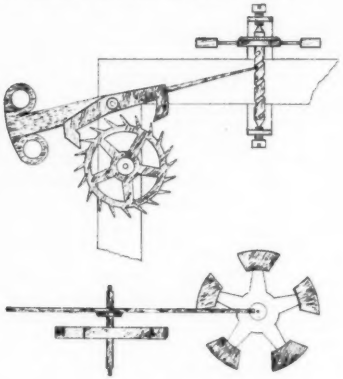
We wish to extend to Mr. B. Mellenhoff of New York City, a most active member of the Horological Society of New York, our deepest sympathies in his recent bereavement through the loss of his beloved wife on the 31st of May, 1938.

## Unusual Escapement

Drawing and Article By
W. H. SAMELIUS

On one of my recent trips, our mutual friend, Mr. J. E. Coleman of Nashville, Tennessee, handed me a copy of a peculiar clock escapement which our readers will be interested to see. This escapement is very simple and the diagram will suffice to show its action. Among the claims for this peculiar escapement, the patentee Mr. E. K. Reynolds of New York City states:

"That this escapement is more particularly designed for clocks and other timekeepers which are intended to run for a long time without winding on account of its slow movement so it is particularly suited to year clocks."




It consists of a lever whose point works in a spiral groove or a screw thread in or upon the staff of the balance which is arranged perpendicularly to the arbor of the lever and escape wheel. The escapement is of the recoil type.

The escape wheel causes the lever to vibrate in a plane passing thru its axis and works in the spiral groove of the balance staff. When power is applied this lever will move up and down causing the balance to make two or three turns. The lever acting upon the balance in this way may be made to give it as rapid a movement on its axis as is necessary to insure perfect regulation and yet preserve a long interval between escapes.

In making this escapement it is well to make the lever as long as practicable in order that the versed sign of the arc described by its point may be very short and that the point may consequently not require to enter very deep into the grooves of the balance staff. By a long lever, a slower escapement may be obtained.

The point of the lever may have a small friction roller applied to work in the groove if necessary. The escapement may be employed with or without a hairspring applied to the balance, but the inventor, led by experience, believed the balance spring would not be necessary.

This escapement was patented United States, October 2, 1855.

## Book Reviews—The Horologist's Library

We shall review this month a book entitled "Practical Benchwork for Horologists," by Louis and Samuel Levin.

This is a new book covering the modern and practical methods of watch repairing and adjusting. It has 346 pages and 438 illustrations.

There has been a great number of works on horology written and the field has been covered thoroughly by many authors each going over the same ground in a slightly different manner, many of these books being mostly a catalog of tools and a repetition of the subject matter to be found in any good book on horology. Too little attention has been given to the practical side of the subject and they have been of little use to the student and the workman who purchased them with the idea of securing practical benefit from them.

In planning the volume which we have under consideration the authors had in mind a book which would be useful to the following classes of readers: The young students who have the ambition to learn but do not have the opportun-

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ity to mingle with good mechanics and are thereby limited to the knowledge obtained from their own experience; the advanced horologists who have learned to work according to fixed rules and wish to know the underlying principles upon which these rules are based; and, lastly, the group of mechanics who work on various types of small mechanisms requiring the use of horological equipment.

A considerable portion of the book is devoted to the lathe and its attachments, which of necessity must form the nucleus of the horologist's equipment. Since the study of theoretical horology is nothing more than the study of mechanics it is well to bear in mind that practically every sort of device used in regular machine work is applicable to horological work as well, except that it must be of smaller size. Constructional details are given for making numerous tools which are not otherwise obtainable.

In the preparation of this book liberal use of photographs and drawings has been made. In fact, many subjects will be found to be clearly explained almost entirely through the medium of pictures. The drawing of escapements, stressed so much in other horological books, will be found free from the inherited errors which have crept into many current works.

The table of contents follows: Tools and Their Uses. Repair Problems. Adjusting. The Watch Rate Recorder. Watch Performance. Mechanical Drawing. The Lever Escapement. Appendix of Mathematical Formulas and Abbreviations.

This book may be procured from the Book Department of THE AMERICAN HOROLOGIST, price postpaid $5.00.

D. L. T.

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## Clockmaker Once Had To Be Good Mechanic

**Meriden, Conn.**

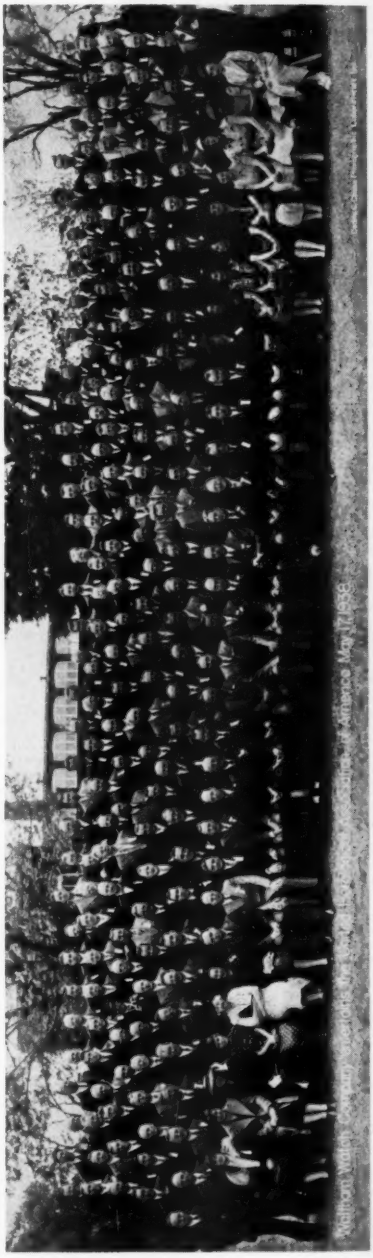
To be a horologist a couple of hundred years or so ago a man had to know both the science and the art of timekeeping; to be a clockmaster he had to be a skillful mechanic. From time to time a completely rounded man in science, art and handicraft appeared, such as Tompion, Graham and Harrison in England; LeRoy, Berthoud and Breguet in France; Ramsay, Reid and Smith in Scotland; Huygens in Holland, and Rittenhouse in America, writes D. W. Hering in *American Collector.*

In lesser degree there were many in America as well as elsewhere of meager ability.

In America, we can cite examples that will show a wide distribution of such craftsmen and an interweaving of their output in a pattern that was spread over a broad territory. In clock lore as in that of furniture making and other industrial arts, certain names are so outstanding as to have become household words.

Especially was the case in the New England colonies, where the fame of their clockmakers eventually rose to such a height as to produce the impression in later times that little ability or activity in that line was manifested anywhere else. But before the end of the eighteenth century skillful clockmakers in other colonies had been producing their wares and acquiring a reputation. This was more marked in the middle states and Maryland than in the colonies along the sea coast of the South.

A clock was one of the few things not brought over in the Mayflower. If there was a clockmaker among the passengers he had not means of practicing his art except by importation of materials from Europe. Lack of mechanical facilities



Fourth National Convention, U. H. A., Assembled at Waltham Watch Factory, May 17, 1938

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Fourth National Convention, U. H. A. A., Assembled at Waltham Watch Factory, May 17, 1938

in America and high costs of materials for metal clocks, which had to be imported, drove would-be clock-makers of America to the production of wooden movements. These, however, were not attempted until the colonies had been growing for a hundred years and the compulsion under which they were made continued from about 1770 until about 1820.

## Clock Owners Liable to Fine If Time Errs

London.—The town of Guidford, Surrey county, has begun a campaign to end the nuisance of being tardy because of street clocks which tell the wrong time.

Owners of public clocks not registering the correct time will be liable to fines of $25 and a daily fine of $10 thereafter under a general powers bill to be presented to parliament next session.

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## Crazy Clock Clicks and Clanks —Cuckoo

*Eccentric Timepiece in M-101 Shows Off, Demands Notice*

Cleveland, Ohio

Why, with all the perfectly balanced clocks at Fenn, should room M-101, where the radio class meets, be blessed with an eccentric one?

Perhaps it is demanding recognition because daily at one twenty-seven, just when the class is getting started, it starts its demand for recognition, with a whirring, buzzing noise which lasts for a few moments.

As soon as everyone has recognized its presence, it goes quietly about its work with no more disturbance, as loyally as ever in keeping the class informed of the exact time.

The first day the class met, they were being very attentive to Mrs. Florence Evans, who teaches the class in radio broadcasting technique and scrip writing, when suddenly the clock startled the entire class with its noisy antics.

Mrs. Evans soon restored order, however, by informing her future radio announcers and studio officials, that it was an ordinary occurrence, and not to be alarmed about it.

This restored order, but if anyone knows of a way to prevent the daily occurrence of this disconcerting ordeal in the future, the class would appreciate knowing how to remedy the situation.

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## Horological Association of Nebraska, Inc.

At our state meeting which was held in Omaha, April 24th, on the initial stop of National Executive Secretary's speaking tour, a new Guild was formed by the watchmakers of Lincoln who attended the meeting.

The formation of this Guild was for a long time the desire of the State Association, the result of which has inspired the state officers to such a degree that they are holding a series of meetings throughout the state to establish new Guilds.

Enthusiasm has run so high among the watchmakers throughout Nebraska and the policies of the State and National Associations are being so well received, especially the proposed Nebraska licensing law, that membership has increased 150% in the past 60 days. This tremendous increase in membership in so short a period and the many inquiries that have been coming in daily has rather congested the office of the State Secretary for the time being, but with continued effort, we plan to have things running smoothly again in a few weeks.

The next day after our Omaha meeting, April 25th, C. W. Tiahrt and Morris Yost of Omaha, together with Geo. F. Rathbun and C. N. Frandsen of Council Bluffs, Iowa, motored through a heavy rainstorm to Sioux City, Iowa, to attend the second meeting on Mr. Hagans' tour. The object was to assist in any way possible in the organizing of our neighboring state. Incidentally, a very enjoyable time was had which will long be remembered by those who made the trip.

### Lincoln Watchmakers' Guild

On May 18th, at the first regular meeting of the Lincoln Guild, held at the Hotel Lincoln, Lincoln, Nebraska, the state officers and members of the Omaha Guild attended to lend a hand and assist in furthering the organization work.

The main speaker of the evening was State President R. P. Kraatz, who outlined the purposes and aims of the Association and explained the need of a strong organization in the uplifting of our craft. Vice President C. W. Tiahrt and State Secretary Morris Yost also addressed the group.

By a unanimous vote the following officers were installed: Paul H. Powell, Chairman; Ruel L. Senift, Vice Chairman; Kenneth G. Hunt, Secretary-Treasurer.

All the Lincoln watchmakers who attended and were not already members, made application for membership as also did those who were present from neighboring towns.

The Lincoln Guild meetings are held the first and third Wednesdays of each month. All watchmakers in this area are invited to attend.

### Grand Island-Hastings Watchmakers' Guild

The Horological Association of Nebraska held a special meeting at the Hotel Stratton, Grand Island, on Sunday afternoon, June 26th, and extended invitations to all watchmakers and jewelers within a goodly radius.

The success of this meeting was largely due to the efforts of Mr. Ashley W. Conger of Grand Island, who was contacted to make arrangements for the meeting which was very well attended.

Mr. Conger introduced the speakers who were: State President R. P. Kraatz, Vice President C. W. Tiahrt and State Secretary Morris Yost. Mr. Tiahrt gave an outline of the proposed licensing law which will be presented at the next Nebraska State Legislature. Jack Lacher, Chairman of the State Advisory Board, also assisted in conducting the meeting.

Numerous applications for membership were taken and later in the afternoon the Grand Island-Hastings Guild was formed and the following officers were elected: E. F. Bruce, Hastings, Chairman; Ashley W. Conger, Grand Island, Vice Chairman; Walter L. Cornelius, Grand Island, Secretary-Treasurer.

The next meeting of this Guild will be held in Hastings, Nebraska, the last Sunday afternoon in July. The State Officers will be present and watchmakers in this vicinity are urged to attend.

### Lincoln Guild Holds Special Meeting

On National Secretary Hagans' return trip to Denver, he stopped off at Omaha and State President R. P. Kraatz acted as host for the afternoon. Mr. Hagans made a tour of the jewelry stores of the city, meeting the members of the Association at their work.

Mr. Hagans and Mr. Kraatz spent a pleasant afternoon at the Ak-Sar-Ben races until it was time to proceed to Lincoln for the special meeting of the Lincoln Guild.

This meeting, which was held at the Hotel Lincoln on June 28th, at 8:30 p. m., had a very successful turnout.

Mr. Kraatz opened the meeting with a short talk and introduced Mr. Hagans, our guest speaker, whose lecture before this group was adjudged one of the finest that we have ever been privileged to hear.

Several watchmakers of Beatrice, Nebraska, who were present, expressed the desire to organize a Guild so in the very near future we are looking forward to establishing a Guild in that city.

MORRIS YOST, *State Sec'y.*

## Watchmakers' Guilds

D. L. THOMPSON,
National Technical Board

A Watchmakers' Guild is a fraternity, corporation, or association created for the purpose of mutual aid and protection.

Guilds of watchmakers were active for several centuries but with the coming of the machine age in manufacturing watches they gradually became less active and their members became selfishly individualistic in their practices. Co-operation between Guilds and between members slackened and this, together with the demoralizing effect of cheaply made timepieces and the consequent lowering of repair prices, resulted in a general lowering of the morale of the trade. Price-cutting competition naturally resulted from this state of affairs until what was once a lucrative profession has been reduced to a sordid occupation. Many workmen have become so disgusted with the way the business is being conducted that they have left it to engage in more remunerative pursuits. There has been a gradual lowering of the quality of repair work demanded by employers and turned out by repairmen and in consequence of this the general public has come to regard the men engaged in watchmaking as poorly trained workmen. This is a deplorable condition for which we have no one to blame but ourselves, and when we say ourselves we are speaking of the Jewelry trade in general as the vast majority of Jewelry Stores are owned and managed by watchmakers.

You may ask how this condition has been brought about by ourselves. As far as the production of cheap watches, and of cheap jewelry in general, is concerned we have no direct method of control over it but we have had an indirect control which we have not collectively attempted to use. This control consists simply of refusing to recommend or sell low-grade merchandise and, also, in refusing repairs to such merchandise except at a fair profit. We have not only failed to protect our business from the inroads of cheap merchandise but we have gone so far as to prominently display and push the sale of such, taking a meager profit and obligating ourselves to guarantee and repair the same. In this way we have helped to flood the market with low-price merchandise and this has reacted upon us to such an extent that we find ourselves in the untenable position of spending our time and efforts in the sale of low-profit merchandise and on the repair of same at correspondingly low charges. Further, we have sat idly by and watched the sale of this shoddy merchandise by all manner of stores other than Jewelry Stores and while we did not actually approve of this we have

ostensibly given our approval by accepting it for repairs.

The lowering of our charges for repairs on low-price articles has resulted in our loss in other directions in that we have educated the public to expect a low level of prices for merchandise we sell and for repairs to the finer grade of jewelry. The public, generally, does not know the difference, apparently, between low and high-grade jewelry and we have been careful not to explain it to them as we have been too eager to push the low-price idea with the hope of a greater turnover of our investment to give us sufficient profit. The net result has been that we have deflated prices on both merchandise and repairs to the extent that we find that in order to restore the business to a sound and profitable basis we must sell higher grade merchandise and revise our repair charges accordingly. With the lowering of profits there has come a feeling among watchmakers of each man for himself and a competitive bitterness that has had the tendency to make us look upon our fellow craftsmen as being more responsible than we for the deplorable condition in which we find ourselves.

There are many fine men in the Jewelry business who have always held their chins up and have conducted their business in a highly ethical manner and who enjoy the confidence and respect of the public. These are the men who have prevented the business from going to absolute ruin by trying to bring order out of chaos and to keep alive the spirit of mutual co-operation in the trade.

As to the extent to which our demoralization had progressed we have only to reflect upon the fact that when the Government was preparing codes in putting the NRA into operation it could find no body of men in the Jewelry trade that could speak for it as a whole. Several organizations claimed this right but the Administrators of the Act could not select any truly representative body to deal with and remarked upon the lack of organization in the trade and upon the fact that we could not agree among ourselves whether we should be classed as a professional group or as craftsmen only. There were many Associations represented but no semblance of organization and co-operation among them, only a state of confusion and discord that was nothing less than deplorable.

The NRA had a good effect in that it forced us to realize the necessity of organization in the Jewelry trade. At that time there were two outstanding Associations with some national influence and several state Associations with some state influence. None of these was adjudged to have the voice to speak for all and after much confusion the representatives from each got together and agreed upon a final draft of the Jewelry Code which was not satisfactory to all concerned but merely a compromise. Whether the NRA would have been good or bad legislation in the long run we can only guess but we do know that some sort of code of business ethics and practice is just as necessary today as it was then for the stabilization of the trade. Some of the good provisions of the Code are being incorporated into the bills for registration and licensing of watchmakers which are being presented to the legislatures of several states at the present time. Wisconsin has the honor of being the first state to enact this much needed legislation and we are sure that the watchmakers and the general public in that state will benefit greatly as it cannot do otherwise than increase the proficiency and efficiency of the men engaged in the practice of horology there.

There are at present three outstanding Associations in the Jewelry trade, viz., The National Retail Jewelers Association, The Horological Institute of America, and The United Horological Association of America. Each of these is working in a field of its own. Each has definite functions to perform for the good of the trade and is actively engaged in the performance of these functions. These Associations are working in harmony and mutual co-operation for the betterment of conditions in the trade.

The membership of The National Retail Jewelers Association is limited to Jewelry Store owners and managers. The membership of The Horological Institute of America is not limited to any particular branch, their main function is the certification of watchmakers. The membership of The United Horological Association of America is limited to watchmakers only and includes both proprietors and employes. Associate membership is extended to those who are no longer active in the trade but who still have the interests of the trade at heart. The Association has members in all states and in several territorial possessions of the United States, many of whom hold membership in one or both of the first two mentioned Associations, and is a representative body of the horological craftsmen of America.

The United Horological Association of America was formed in May 1934, at Washington, D. C., for the purpose of uniting the several state Associations of watchmakers into a national Association, through affiliation, through which all could work together to eliminate the evils which were destroying their prosperity and to restore the trade to its former high standing.

Our efforts in this direction have met with widespread approval and now we see the state Associations more active than ever before and their memberships increasing daily. A spirit of fellowship and co-operation is being displayed and there is an enthusiasm for social contact and educational programs in their Guilds. The benefits accruing from associating with and holding fellowship with brothers in the craft are incalculable. Meeting and working with brother watchmakers to solve the problems of what should be done to make the trade more profitable and what can be done in this respect that will have immediate effect is beginning to bear fruit. Much has been done in the past four years to accomplish our aims but there is much more work to do and all hands are needed to help in securing the things we desire.

The revival of Guild activity all over the country has resulted in bringing together the manufacturers, distributors, material houses, and watchmakers Associations in a concerted effort to eliminate those practices in the trade which are holding back our advancement and prosperity.

Become an active member in your city, county, or district Guild and take a part in the work it is doing for your benefit in uplifting the trade. Meet your fellow craftsmen of your vicinity, you will find them good fellows, and you will feel better towards them and they towards you. The Guild needs you and you need the Guild. Much good is in store for you and your Guild will become the outlet for your thoughts on promoting the welfare of the craft.

If there is no Guild operating in your vicinity your state Association will be glad to help you form one. If you have no state Association, The United Horological Association of America will be glad to assist you in forming one, send you all particulars as to organization, and assist you in all details. There is no charge for the help we have to offer.

We should like all Guilds to write for any information they desire about The United Horological Association of America, its constitution, organization and prospectus, and its progress in the work of bettering conditions in the Jewelry trade. D. L. T.

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# Report of the Educational Committee, Horological Institute of America, to the Annual Meeting, Washington, D. C., May 9, 1938

At the last annual meeting of the Horological Institute of America, a resolution was passed, directing the Educational committee to prepare plans for a new educational program, covering procedure and costs, with authority to proceed as promptly as possible with this plan, under the advice and authority of the Finance Committee.

In obedience to this instruction, your committee has made a thorough study of additional educational work that might be conducted by the Institute, has formulated a plan, collected material for reproduction and distribution, and has ascertained the costs for putting the plan into effect. Should the Institute accept the plan, your committee stands ready to go ahead with the work, as soon as the Finance Committee approves the expenditure, as directed by the resolution.

Now let us consider the plan for this new work.

For this, the basic question is, first, "**what** is it that watchmakers, not fully competent, need to be taught to improve their ability up to the Certified Watchmaker standard of the Horological Institute of America?" And, second, "**how** can educational help be given, to fill the ascertained need?"

For answering the first part of the question, reliable data is at hand, in seeing the actual work done by watchmakers all over the country, when taking examination for certification. The examiners of course, do not know the names of persons whose work they inspect—but the work is there, and that is what is needed for the study. Members of the Educational Committee who have been at one time or another on the Examining Board, brought their knowledge from this experience, to help find the answer to the question "**what** must we teach?"

Naturally the work that does not pass the certification tests is most important for our purpose, which is to discover what it is that men lack, and need, in order to become competent and successful. And even among the work that passes, while some of it is superbly done, some just passes the minimum requirements. Altogether, then, here we have a well-nigh perfect field in which to delve for the answer to our question.

The work examined, in hundreds of cases over a period of years, indicates (as anyone familiar with watch repairing might guess) that those who did the work may be classified into the following groups:—(1) workmen who know about what should be done, but do not have skill enough to do it well: (2) workmen who have mechanical skill, but lack understanding of the acting principles of watch mechanism; (3) workmen who have neither skill, nor knowledge of the mechanical principles of horology; and (4) workmen who have both adequate knowledge of horological principles, and skill with tools, to restore defective watches to good timekeeping order.

The last-mentioned group comprises those who passed the Certified Watchmaker tests with practical and written work graded, say, between 90 and 100 per cent, and may be left out of the picture, in making an educational plan.

The group number three, at the opposite extreme, with very little or none of either knowledge or skill, we believe needs some prior instruction under a personal teacher, to arrive at a point where they may benefit markedly by the educational plan we have in mind. It must be admitted that no plan whatever, that omits some personal instruction, can be depended upon to make a watchmaker out of a beginner.

So the plan we propose is based mostly upon the needs of groups number one and number two—workmen or apprentices who have some even if not much skill with tools, and some familiarity with the watch mechanism and how it works.

There must be no misunderstanding of this:—that nothing else can fully take the place of personal instruction, provided the teacher is competent both in what is to be taught, and in teaching ability itself. All that can be expected of any other method, including our "plan," is help that will be useful only in proportion to the ambition, talent, and hard work of the student himself.

For successful ability in watch repairing, knowledge and skill must go hand-in-hand. So the material assembled for the new educational plan covers these two distinct phases of the watchmaker's ability:—(1) Knowledge of the watch mechanism—its groups of parts from power plant to dial-train; the purpose, forms and action of each, and their interaction; all of which may be stated as "how the watch ought to be"; and (2) Practical work with watchmakers' tools, and **how to develop** skill in using these, in fitting ready-made repair parts, making alterations on these when necessary, or in the case of certain parts, making them outright when no suitable ones can be bought. This section also includes some benchwork subjects not of the nature of replacements of parts. The assembled material is a collection of treatises, on a range of subjects quite comprehensive as it stands, but that may be considered as a foundation also to build upon, by making additions to it to fill in details here and there, and to keep the series up-to-date as improvements may be made in horological knowledge and practice.

Now we have explained in outline, what it is proposed to teach; and it remains to go into the matter of how this teaching is to be done.

We started out with the idea of using our collection of treatises as lectures, these to be multigraphed, with lantern-slides and blackboard illustrations outlined, the material to be sent out for use by horological societies at their meetings. Some service of this kind has been given this year, and we have received opinions from officers of organizations, about its usefulness. At the same time, we have made inquiries of officers of other horological societies, and of educational authorities outside of the horological field, to obtain opinions from experienced sources as widely as possible.

We found that many authorities disagree with depending solely upon lecture texts and illustrations used at meetings, as an educational method. A summary of these opinions will be stated as follows:—

(1) Meetings of local organizations occur at times too long apart for lectures given therein to have enough cum-

ulative value to men who are seriously in need of instruction.

(2) The quantity of educative material in any important subject in horology is too great, and its presentation would be dragged out too long to be practically useful if given in lecture installments monthly, or even weekly.

(3) The learner should have access to his sources of information during every day's work, just at the times when he happens to find help needed.

(4) Lecture room work, with visual aids, is only part of any effective method of education, and must not be considered sufficient by itself.

(5) The reading of a lecture, written by someone else, frequently fails to interest or inspire an audience. It is often difficult for a small local organization to find a good lecture among its members. A competent lecturer sent out by a national organization cannot appear often enough before any one local audience, to to effective as an instructor.

(6) To depend upon lectures for educational aid would confine this to only those who live where there are local organizations, which is mostly only in the larger cities.

To meet the objections stated, your committee sought a plan that would avoid dependence upon lectures alone. So the plan to be explained as follows, was formulated:—

(1) To have printed, all of our collection of technical treatises referred to in the foregoing part of this report.

(2) To have the illustrations both printed in the text, and made up in lantern slides, for use in lectures when so desired.

(3) To have sets of the entire collection as printed, bound in strong loose-leaf binders for distribution, adapted to make additions, as will be explained later.

(4) To include a supply of blank sheets punched for binder, for making the student's own notes, from daily experience at the bench, or from lecture discussions, these to be filed at proper places with the treatises in his volume.

(5) To give the complete bound volume, free of cost, to each present member of the H. I. of A., and to new members as they join, and to those who pass the Junior and Certified Watchmaker examinations, with their free one-year memberships that go with certificates as issued.

(6) To send to members periodically, as issued, additional treatises on new subjects, uniform in printer's format with the basic volume, prepared to file in the loose-leaf binder. It would be prohibitive in cost to give the volume retroactively to all who have been certified in the past; and there is no obligation to do this, but we suggest an offer to these to send them the volume at a charge equal to its cost.

It will be seen that this plan would obviate the objections stated as number one to number six, inclusive, to educational aid sent out as purely lecture material. Each workman would have for himself, at all times, right at his bench, good treatises to refer to whenever he happens to need information on any cases as they arise; and the collection could be used as a systematic course of study and practice at the bench. This would be different indeed from chancing that what he needs at the moment might be something he would have to remember from a lecture heard some months before; or that he has not heard at all. The volume, with treatises, personally made notes, and additions sent by the Institute, would make a reference work that would keep growing in value.

What must be faced now is the estimate of cost for putting this new educational plan into effect.

For brevity's sake we will state the totals instead of the details of the estimates that we have obtained, as follows:—

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|---|---|
| Printing and distribution of initial volume | $1,938.00 |
| Preparation, printing and distribution of periodical additions to initial volume, for 12 months, at $200.00 per month | 2,400.00 |
| Supplementary lecture material and equipment | 965.00 |
| Miscellaneous unclassifiable | 700.00 |
| Total | $6,003.00 |

The Institute has asked us for a plan for doing a greater educational job. We have treated this task seriously; we believe that what we are proposing is well worth doing. Your committee has always been willing to give unstinted thought and time to its work, and will continue to do so; but we cannot buy paper, printing, postage and equipment without money; and this leads us to say something about financial support for the Institute; not only for our part, but for all of its other good works.

The horological craft and trade is made up of groups more or less separated into those who make, sell and repair time pieces.

Of these, the Institute deals most directly with those who repair watches. Its work has been largely directed toward the improvement and recognition of skill in repairing and maintaining the timekeeping accuracy of watches.

Since about 1930, the Institute's income has been largely from annual memberships, with dues from $2 to $10 per year. Many of the dues-paying members are watchmakers earning their livings at the bench; many are repair-shop and jewlery store proprietors who are decidely in the "Small Business Man" class. While it is true that these have benefited from what the Institute is doing to elevate the average ability of watchmakers, their benefits the proportion, have been little compared with those of manufacturers, wholesalers, importers, and the very large retailers—although the smaller fellows have so largely paid the bill.

Some may ask:—Well, what does anyone gain by elevating the ability of watchmakers, except the watchmakers themselves?'

Manufacturers may feel that, once someone buys one of their watches, it is no concern of theirs if the watch is spoiled by botchwork in repairing it; and therefore that it is not important to them to support an organization devoted to improving the quality of repair work. But the fallacy of this is shown as follows:—

People are urged by makers and sellers of good watches to buy for only this reason: Because they will keep better time and last longer than cheap watches. If not for this, then how under the sun could anyone be persuaded to pay fifty dollars for a watch, instead of five dollars?

As far as outside appearance goes, a cheap watch may make a good eye-appeal to a prospective buyer, as a watch worth ten times as much. But the argument for long-lasting accurate timekeeping quality may win, and the good watch be sold.

Then, in a year or two, the watch needs servicing. Botchwork may convert the fifty dollar watch into a few dollars' worth.

And then, in the owner's mind, all that

he was told about the **value** that more money would buy, is discredited. The high-priced watch in a short time has become a poor timekeeper—just what he had been warned that the **cheap** watch would soon become.

Who gets the blame? In most cases, both the manufacturer and the seller of the watch—not often enough is the incompetent repairer blamed. Why? Because he is the only one who **has the chance to talk**; and naturally persuades his customer that the watch, rather than his work, is at fault.

So the owner of the watch thinks simply that he paid a high price for a poor watch; and there are many thousands of persons going around believing and saying that, from their own experience, specified watch manufacturers and retailers misrepresent what they sell. As far as these thousands go the huge funds spent advertising good watches, are wasted. They believe they have learned by experience; and how can they be taught otherwise? Only in one way: by different experience; by having the services of fully competent watchmakers, for **maintaining** the good qualities of watches for which good prices are paid.

If the commercial interests in the watch trade would truly and shrewdly see the value to them, of the Institute's work in improving the work of repairers, they would support this adequately. A few have done so, up to about ten years ago; but while millions of dollars have been spent since in advertising good watches, the financial reports of the Institute tell how little has been done in backing up this advertising, by helping the Institute lessen the power of botch repairers who continually discredit all that is said in advertising and over the counter, about the true values that should persuade people to buy the better makes and grades of watches.

Failure to support our efforts to lessen the ravages of botchwork, is steadily handling the huge volume of business over to makers and sellers of cheap "hardware and drugstore" watches, sold to run a year and then buy another one, eliminating repairing altogether.

A microscopic part of what is spent in advertising, if given to extend and speed up the work of the Horological Institute of America, would produce an additional dividend of profit on this advertising, that would certainly return many times the amount of such contributions.

The work of the Horological Institute of America helps every interest in the trade—big and little—all who manufacture, sell, or repair watches **of the better grades.** Whether to increase its present good work, or to initiate this new educational plan, the Institute will have to have a better response from the trade to its appeal for financial support.

JOHN J. BOWMAN, Chairman
The Educational Committee, The Horological Institute of America.

## Report of Judges Workmanship Contest, U. H. A. of A., 1938

*National Convention, Boston, Massachusetts*

Hand-made parts for complicated watches, striking rack for pocket repeater, clutch pinion for 4 ligne watch, stem for high-grade pocket watch. Mr. Ferd. Freistadter, first prize.

Going lever escapement, drawings and model made by Francis Dudek, student Elgin School of Watchmaking, first student prize.

Lever escapement model, stationary, made by H. F. Meyer, student of Mr. Ferd. Freistadter, Boston, Mass., second student prize.

Graham regulator with patented compensated pendulum rack, made by Warren F. Fraser, Boston, Mass., first prize in Clock Making.

Gravity escapement clock, designed and made by Major Edward Hamilton, Milton, Mass., second prize in Clock Making.

Respectfully submitted by
WILLIAM H. SAMELIUS,
GEORGE HOLZWORTH,
FRANK FOEGLER, *Chairman.*

## Connecticut Horological Association Third Annual Convention

The Connecticut Horological Association held their Third Annual State Convention Sunday, June 12th, at Hotel Bond in Hartford, Connecticut. The convention opened at 10:00 A. M. with the Executive Board in session, presided over by State President, Mr. Seibel, who had recently been appointed as a member of the National Executive Board at the recent national convention in Boston.

The convention recessed at 1:00 P. M., reconvening at 2:30. At this time the delegates from all the state guilds were present. The guilds included Bridgeport, Hartford, New Haven, New London and Waterbury. The yearly reports were made by the state officers and all committees. A most important feature was the final report by Mr. A. R. Raphael on the state licensing bill. After considerable discussion the final draft was accepted, and the bill will be presented to the State Assembly in 1939.

The Nominating Committee presented

the following ticket: A. R. Raphael, New Haven, President; Max Toley, New London, Vice-President; Earl Becker, New Haven, Recording Secretary; Bernard Scanlon, Meridan, Corresponding Secretary; Charles Stiles, Hartford, Treasurer. The new officers were installed by the National President, who was present at the convention.

Mr. Fagan gave an extensive talk on the national affairs and the recent convention held in Boston. He also spoke on the great need of continued building up of the National Association.

Those who accompanied Mr. Fagan to the Connecticut convention were W. H. Keayon, W. P. Fillebrown and A. R. Leavasseur.

The convention extended a vote of thanks to the convention committee, which was headed by Carl Linquist, Hartford Secretary; A. C. Gilman and Charles Stone.

The convention closed with a banquet held in the evening, at which time the members and their wives and friends attended. There were about 200 in attendance. The banquet was held in the Egyptian Ballroom of Hotel Bond. At the banquet their were many prominent speakers, among whom were the National President, H. N. Street, Chairman of the Chamber of Commerce of Hartford and Mr. C. W. Winslow, Convention Manager of the Hartford Chamber of Commerce. Selections on the violin were rendered by Charles Stone, accompanied on the piano by Hazel G. Elvans, Hartford. Great praise was given to the toastmaster, Mr. A. H. Rosenbeck of New Haven, for the splendid manner in which he introduced the speakers.

The convention closed about 10:30 P. M. with everyone enjoying a good day.

BERNARD SCANLON, *Secy.*

## The Horological Association of Virginia

The Horological Association of Virginia held a supper meeting Friday June 3, 1938, at Brown's Restaurant, Norfolk, Virginia. The guest speaker for the evening was Mr. Orville R. Hagans, Executive Secretary of the United Horological Association of America, Inc.

After a short business meeting Mr. Hagans gave a very interesting lecture on "The Benefits to be Derived from Belonging to a Horological Association." He explained what is wrong with watchmakers and how they can overcome their narrowness and broaden their views.

The question of protective legislation was brought up and the speaker told of some of the benefits to be had from such legislation and how best to secure such legislation.

The program was ended by the showing of several technical films and films on the activities of the United Horological Association of America, Inc.

RICHARD V. BAILEY, *Secy.*

## Bowman Technical School Addressed

Orville R. Hagans, Executive Secretary of The United Horological Association of America, Inc., visited Lancaster, Pa., May 27th, accompanied by Mrs. Hagans, on his nation-wide speaking tour that started in April.

Mr. Hagans addresesd the students of Bowman Technical School on the elevation of the horological craft standards of ability, and the effect on this of State licensing of watchmakers, using the licensing of watchmakers as now being done in Wisconsin, to illustrate his talk. His address created very great interest, and was followed by a "quiz" upon the subject of his talk.

Mr. and Mrs. Hagans were taken for tours of the historical places in Lancaster county, by Messrs. Beehler of the Hamilton Watch Company and Bowman of the school; and then visited the Hamilton factory where they were shown the research work being conducted by the Company on the higher technical development of watch manufacturing. In the evening there was a dinner in honor of the visitors, attended by rep-

resentatives of the Lancaster industry and their wives, after which Mr. and Mrs. Hagans left to continue the tour through the South.

JOHN J. BOWMAN.

## District of Columbia Horological Association

After four years that the United Horological Association of America was formed in the Willard Hotel, Washington, D. C., within the same walls on the evening of June 1, 1938, the first steps were launched for the organization of the District of Columbia Horological Association.

The meeting was sponsored by the U.H.A.A. and conducted by its National Executive Secretary, Mr. Orville R. Hagans of Denver, Colo.

The address by Mr. Hagans was of keen interest, and demonstrated his knowledge of the nation-wide conditions in the Horological field. The motion-pictures, augmented with explanatory remarks, gave all those present a vivid presentation of the U.H.A.A. and its purposes.

Over 60 watchmakers were present, and at the conclusion of his address, Mr. Hagans ably answered several questions in the interest of the Craft. After which, temporary officers were elected to make definite plans for permanent organization.

Among those present was Mr. Ralph Gould, Secretary of the H.I.A. who introduced Mr. Hagans. Mr. Greenan of Kur Jewelry Co. introduced Mr. Gould.

The officers elected are: Edw. T. Green, Pres.; Merton Myerson, V. Pres.; Olindo Marseglia, Secretary-Treasurer.

O. MARSEGLIA, *Secy.*

## Greater Miami Watchmakers Guild

At a meeting of the Greater Miami Watchmakers Guild, held on the above date at the Alcazar Hotel, we had with us the National Executive Secretary, Mr. Orville R. Hagans who gave us a very interesting and instructive talk on the work done and being done by the U.H.A.A. and urging us to wake up and try to get our entire state organized.

Mr. Hagans then treated the Guild to a series of motion pictures of members of the National body, of views of the exterior and interior of the Elgin National Watch factory, also pictures of interesting clocks of the past and some clock and watch escapements.

After this a Dutch lunch was served. The entire evening was one of interest and greatly enjoyed by all those present.

H. A. ANDREWS, *Secy.*

## Watchmakers Guild of Tampa

West Coast Florida Jewelers and Watchmakers were addressed June 13 by Mr. Orville R. Hagans, Denver, Colorado, at the Chamber of Commerce Auditorium.

The meeting was well attended, and a Guild in St. Petersburg is a sure result in the opinion of those present from that city. Mr. Hagans was introduced by our President, T. R. Ritter, expressing his appreciation and gratitude from the group of members that had struggled to keep the Guild alive and staked their hope of revival on his presence. They were not disappointed, as his forceful and convincing speech and helpful advice gave inspiration to everybody present. The fact that many states are working on examinations, and License Boards stressed the need for the Guilds in the state to form a solid organization and be prepared ot meet the undesirable drifter from other states. A spirit of fellowship and consideration prevailed all through the meeting, and the pleasing personalities of Mr. and Mrs. Hagans gave a lasting memory of loving-kindness with everybody.

Mr. Ritter also emphasized the stress and sacrifice they were making on this trip for the benefit of the watchmakers. Mr. Hagan's efforts and accomplishment since the code hearing in Washington, where the U.H.A.A. had its start, has been remarkable, and it should be etched

in every watchmaker's heart that he is the man they should give their support and cooperation as the only hope of raising the standard of the trade.

W. S. WILSON, *Secy.*

## Watchmakers' Association of Indiana, Inc. National Affiliation No. 26

The meeting conducted by Mr. Orville R. Hagans on the night of June 24th, at the Antler's Hotel, was one of the most surprising, attended by any group of watchmakers in this country. In spite of a terrific downpour, the dinner was attended by 40 watchmakers and their ladies. At the meeting afterwards, about 30 more came in. There were three separate organizations represented there. After a talk by Mr. Hagans the three associations "had it out," and consolidated into one state association, which retains the name of "Watchmakers' Association of Indiana, Inc., National Affiliation No. 26." This move relieved the tense situation which has held sway for over a year in this state. The finest cooperation in the interest of the common good of the Indiana watchmakers was evident in this move with the 100% support which is now assured, we have every reason to expect greatest results. The officers of all associations showed the finest cooperation that this writer has seen anywhere. The cancellation of the other two meetings to be held in this state, and the concentration of all resources on this event was one of the finest executive moves that Mr. Hagans has ever taken. The Watchmakers of Indiana wish to thank Mr. Hagans for the fine results of this meeting.

This exciting session over, Mr. Hagans exhibited several reels in connection with the National Organization activities. The very impressive sound pictures of the laboratories and resources of the United Horological Association made a tremendous impression upon those attending the meeting. We only wish that the other associations that have had factional difficulties may secure the services of this great man, whose keen ability to locate and eliminate the troubles in our associations will be the salvation of those who have had the same troubles that we have had.

Summing the whole meeting up, we say without reservations, that it is the most successful ever held in this state.

ROBERT W. SMILEY,
*Sec'y-Treasurer.*

## High Lights and Side Lights of the Indiana Meeting, June 24, 1938

The exceptionally fine appearance of the attending watchmakers caused much favorable comment at the Antler's Hotel. I, personally, heard some one in the lobby say that they thought it was a meeting of an association of Mechanical Engineers and Scientists, giving as his authority the equipment of Mr. Hagans, which was on exhibit in the Gold Room, prior to the meeting.

There is a boy from Lafayette who hereafter will have to bear up under the nickname of "Dynamite." He doesn't know yet whether he got the raw end of the deal.

One woman watchmaker was enrolled on the books of the state association. She has a practice in Terre Haute, and if at all possible the writer of this column will try to prepare a feature article on her activities in that city. It is said she has the ability to make a lot of watchmakers step right along, to put out the work with the speed and precision which she does.

The surprise of the meeting and one which the State Secretary and Treasurer is heartily in accord is the fact that the members feel that the dues are not in dignity with the aims of the association.

The man which we wished to see badly was somehow unable to be at this meeting. We refer to Mr. Rowe of Indianapolis, a certified watchmaker, and a credit to any association.

We wish to comment on the sports-

manship and cooperation which was displayed in all manners by the three groups which were represented there. It was very unusual, and also it was very gratifying for Mr. Hagans to see this.

If this column is appreciated we will endeavor to have it every month.

"DYNAMITE."

## Dayton Guild

The Dayton Guild of the Ohio State Watchmakers Assn. entertained Mr. and Mrs. O. R. Hagans of Denver, Colo. at a dinner Tuesday evening, June 21st, in the Hotel Gibbons.

Following the dinner, our president, M. C. Rife introduced Frank Foegler of Cincinnati, chairman of the legislation committee for the State of Ohio. Mr. Foegler spoke briefly on the proceedure of presenting our license bill to the State Legislature.

Mr. O. R. Hagans, executive secretary of the U. H. A. and principal speaker was then introduced. Mr. Hagans spoke on the many contributions to science and industry by the inventive mind of the watchmaker. Lack of public respect for his ability and the appearance of the so called chisler are a result of our own making that can only be corrected through organization.

One of the hardest things the watchmaker has to overcome, according to Mr. Hagans, is his individualism and feeling of superiority in regard to his fellow craftsman. The U. H. A. and its affilates have done much to remedy this condition. In addition they are doing great work toward eliminating the many evils of our trade.

Following his talk, Mr. Hagans showed several reels of films of interest to both the watchmaker and jewler.

The Dayton Guild hopes that at some future date they will again have the pleasure of hearing from one who knows the trade and its problems so well.

RALPH APPLE,
*Secy. Dayton Guild.*

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## Columbus Watchmakers' Guild

*Report of Meeting of June 22, 1938, Fort Hayes Hotel, Columbus, Ohio*

The Columbus Watchmakers' Guild and other watchmakers in central Ohio were honored to have as their guest Mr. Orville R. Hagans, National Executive Secretary of the United Horological Association. The meeting was attended by 35 watchmakers and jewelers. About half of this number were from small towns in central Ohio. This definitely shows that small town watchmakers are interested in the work of the U. H. A. of A. and desire to organize guilds of their own or to join the Columbus Guild. Of this number four filled out applications to join the Columbus Guild and others showed their desire to join in the near future.

Among those present was Mr. J. P. Sommers, of Pittsburgh, who gave a brief talk on "What Is Under the Smoke in Pittsburgh."

Mr. Hagans' program was most interesting and inspiring to those present. His address touched upon the problem of the licensing bill now being formulated in Ohio and gave excellent advice as to the method of executing the legislation of it. Stressing the importance of securing the membership of those employed by so-called "gyp joints" and "price cutters" he urged all of us to help those in these places to better themselves, as well as ourselves, by trying to secure for them more legitimate employment. He pointed out the advantages of raising the level of our life's work from a trade to a profession, it being his belief that we should assume a more fraternal and brotherly spirit towards each other. Mr. Hagans assured us that this would be the greatest and most valuable asset to our organization. He further stated that a Ladies Auxilliary of the Guild would be a very influential and helpful factor in forwarding the objectives of our association.

As to the relation of the Horological

Institute of America and the United Horological Association of America, Mr. Hagans informed us that they are functioning along harmonious lines, and that all of us should indulge in the materials, information, and assistance offered us by them.

Various films showing members and officials of the National Association, diamond cutting, how Big Bens are made and assembled one film in technicolor, showing advantages of the time recording machines were of interest and educational to the group.

Mr. Hagans' address, his profound love of his work, his sincerity and untiring efforts in forwarding the aims of our association were truly an inspiration to all of us. If anyone left without being in some part better in thought, spirit, and objective, that person is the one whom we should and will try to help.

L. S. ALLEN,
*Secretary,*
*Columbus Guild.*

## Tennessee Watchmakers' Association, Inc., Guild No. 2

New interest was aroused in the watchmakers' craft when Mr. Orville R. Hagans, National Executive Secretary of the U. H. A. of A., delivered his talk to Guild No. 2 of the Tennessee Watchmakers' and Jewelers' Association, June 16, in Chattanooga.

The meeting was held in the Manufacturers' Building and was well attended by the watchmakers of the city with numerous members of the Ladies' Auxiliary present. Among the out-of-town members in attendance were: Charles E. Marshall, newly elected state president; Ralph F. Langreck, Secretary-Treasurer of State Association; George Cochran, W. A. Parker and Mr. Peterson of Nashville.

George R. Harding, President of Guild No. 2, presided. After recognition of the visitors, he introduced Mr. George Cochran, ardent worker and regional director of the Fifth Area of the H. I. A.,

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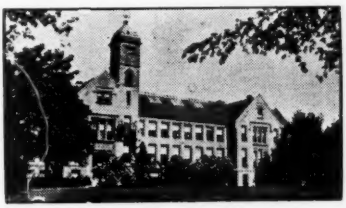

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who spoke briefly on the history and aims of the organization.

The president then introduced the principal speaker of the evening, Mr. Hagans, who spoke at length on the value of a state license law for watchmakers pointing out that at least twenty-seven states had drafted or were drafting such bills. He also pictured convincingly the situation if states fail to license their watchmakers. He also touched on the value of strong organization as a means of elevating the professional pride and ethical practices of the individual watchmakers who are members.

The highlight of the evening was the film which Mr. Hagans showed. Acquaintance with the personnel and the educational series of the U. H. A. of A. was made through this medium. He also showed a film of the Henry Ford collection of beautiful old-time pieces.

Mr. Hagan's set-up is equipped with films, music, recording machine, and microphone and is well able to enlighten the organizations which he visits on his tour in the interest of watchmakers.

G. R. HARDING, *President.*

## Detroit Horological Society

The Detroit Horological Society is making more rapid progress than most associations. Their report reads as follows: Thanks to National Secretary Hagans, we have founded an organization that ought to grow very rapidly and will greatly benefit the watchmakers and jewelers in this territory.

Since this report just 40 days has elapsed and the society has increased their membership over 45% with an association now of 55 paid members and this is only the beginning according to reports.

The Detroit association will take the initiative in broadening the activity throughout the state and establish a State Association when other Guilds are established.

## Horological Association of Massachusetts

Regular meeting was held at the Hotel Bellevue, Boston, and was well attended. The greater part of the meeting was taken up with the settling of business in connection with the National Convention.

At this time on behalf of the local committee of the Fourth Annual Convention of the United Horological Association of America, I wish to thank all those who attended and took part in making the Convention a success.

### Worcester Guild No. 2

The meeting of June 7th was a very interesting one. We heard a fine lecture on watch adjustments by Mr. W. J. Klienlien from the Waltham Watch Co. Also at this meeting we voted in ten new members to the Association. It was passed to omit the regular meeting during the months of July and August. The next regular meeting will be September 6th.

WILLIAM P. FILLEBROWN, *Secretary.*

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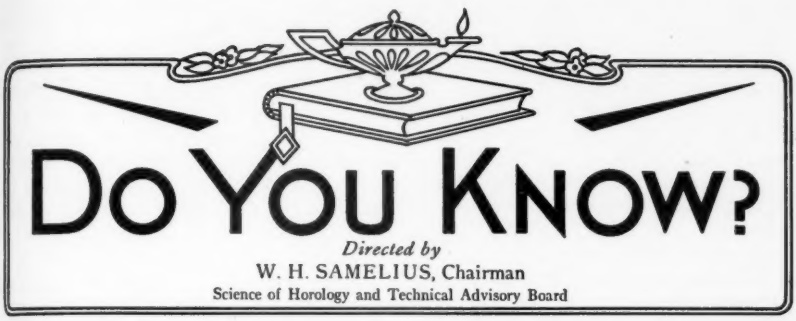


Huygens is credited with making the first seconds-beat pendulum in 1665. Up to this time all clocks had short light pendulums.

In some of the earliest town clocks having a folliot with verge escapement the escape wheel had as high as 87 teeth.

A sheep head clock was one where the dial extended several inches beyond the frame or case enclosing the movement.

Elisha C. Brewster and Shaylor Ives are credited to the manufacture of the first spring clocks in this country.

Many of the early shelf clocks had pendulums that were longer than the case so it was necessary to cut an opening through the bottom of the case and a hole in the shelf to allow the pendulum to swing.

Emmerson S. Root (1820-1896), Bristol, Connecticut, engaged in clock-making, was the inventor of the paper clock dial with the brass sash so common in use today.

It was about 1625 that watches were first carried in the vest pocket, before that time watches or timepieces were too large and heavy.

Watch cases decorated with various colors of gold became a vogue in 1760.

Painted and enameled watch cases were the fashion about 1660.

One million dollars in U. S. gold coin weighs 3,685 pounds avoirdupois.

One millions dollars in U. S. standard silver dollars weighs 58,920 pounds avoirdupois.

A man trades a $70 watch for a $45 shotgun, then pays $3 for the repairs to the gun. He exchanges the gun for a $30 horse which kicks a $28 cow to death and then dies of a broken heart, how much did the man lose?

The diameter of the tower clock on the Eiffel Tower measures 61 feet. It is 600 feet from the ground and is illuminated at night.

There is a talking clock in the Paris Observatory that is consulted approximately 5,000,000 times a year by telephone. It automatically answers the calls and gives the correct time every ten seconds.

The British passenger board Queen Mary is fully equipped for time. There are some 600 clocks in service on board.

John Arnold, a clever English watchmaker (1744-1799), made several improvements to the chronometer escapement. He also secured a patent for epicycloidal wheel teeth, the same as are universally used today.

In 1890, the Waterbury Watch Company included in their line of watches a lady's Chatlain watch that was made entirely of aluminum. The case, plates, pillars and bridges being made of this material. Screws, pinions, hairspring and mainspring being made of steel. On account of its lightness it was considered desirable as the style of that time the ladies wore the watches pinned to the outside of their dress.

When the Aurora Watch Company ceased business all employes having claims for wages were paid one-half in cash and one-half in Aurora movements.

# Largest Quartz Crystal

ONE OF the largest and finest quartz crystals ever to enter the United States went into the vaults of the Bausch & Lomb Optical Co. this week. Coming from the Province of Minas Geraes in Brazil, where it was brought by mule pack from the diamond section of the Serra da Mantiqueira range, 1,500 miles from the coast, the huge crystal weighs sixty-three pounds and cost $18.00 per pound. Based on optical quality, experts believe that it surpasses any museum piece of this type in the country.

Although quartz, a form of silica occurring in hexagonal crystals, is distributed throughout the world, no deposits of suitable optical quality have been found in the United States.

The crystal is solid matter in its most perfectly developed and naturally organized condition. Its exterior is characterized by a form of extraordinary regular geometrical design. The internal structure is, likewise, so regular that the arrangement of the structural units, or chemical molecules, is precisely the same about one point as every other point.

"If the growth of the crystal has been slow, undisturbed, and unrestricted in all directions," says Fred C. Brueck, who has studied optical minerals for 25 years, "its external shape is that of a closed solid, the surface of which is entirely made up of numerous plane facets, or 'faces,' meeting in straight edges, brilliantly smooth, as if highly polished. The arrangement of these facets, measured by their mutual inclinations, is characteristic of each crystal. "Frequently," says Brueck, "the facets are not only truly plane, but as highly polished as though done by a jeweler's lapidary."

Light is reflected and refracted through the crystal. Viewed in sunlight or bright artificial light, the scintillation of spectrum-colored rays shows the beautiful properties of transparent crystal.

Quartz is a uniaxial—one with two different directions of refractive index—and the interference colors may be brought about by the phase difference in various wavelengths of light. The crystal may absorb part of the components of white light, producing a definite color, which not only gives color to the mineral, but also modifies the tone of interference colors by removing from white light the components absorbed by the crystal.

Since the phase difference between extraordinary and ordinary rays emerging from an uniaxial crystal depends on the length of path traversed—thickness of the quartz plate—and on the relative velocities of the two rays, and the relative velocities depend upon the character of the crystal and the direction in which the plate is cut from it, the interference color is related to the thickness of the plate. If the plate is not uniformly thick, it will show interference colors in different places.

"Crystals are frequently found," says Brueck, "which are obviously of a composite character, or composed of more than a single crystal of the same substance, in which there are two, or even three, parts belonging to separate crystals, although they are united in a definite and regular manner. Their twin nature is often betrayed by the presence of what are known as 're-entrant angles,' forming notches, arrowhead shapes, knee shapes and cruciform, or heart shapes. Frequently two or more individual crystals are so intimately blended that the

appearance at first sight is that of a single individual crystal, a crystal of a higher degree of symmetry than a single crystal."

Brazilian crystals are characterized by a peculiar kind of interpenetration "twinning," Brueck explains, as he examines a slab of quartz under his polarizing microscope. "There are two different crystals in this one block. One piece has a right-handed movement like a clock, while the other has a left-handed movement, counter-clockwise. The interpenetration here is but partial and the twin has the appearance of a mirror-image, or reflection twin."

It is Brueck's job to determine the optical axis of the crystal before it is cut, to detect flaws, and to extract the greatest proportion of usable crystal from the material. To do this, he uses plane polarized light, vibrating in a straight line, or circularly polarized light which vibrates in a circle, because the character of the crystal is more easily detected than in ordinary light. Quartz crystals exhibit among other things, one set of concentric colored circles, with a dark maltese cross extending across the field.

Quartz crystals are used by Bausch & Lomb for lenses and prisms because of their high transparency and the superior resolution obtained with this material in the shorter wavelengths of light, such as the ultraviolet. The shorter the wavelength of light the greater the resolving power, disclosing more details in the structure under observation.

Although the microscope is now equipped with special ultraviolet accessories, it is in spectrographs, spectrometers, and monochromators that the chief necessity for quartz optics exists.

Biologists, cytologists and histologists benefit by the use of quartz accessories for the microscope because of the ability to differentiate better between various cell and tissue structures, while the spectroscopist utilizes quartz instruments in detecting various elements whose identifying lines lie in the ultraviolet portion of the spectrum.

## New 20th Century Streamliner Starts by Elgin Observatory Time

When the crack new "20th Century" streamliners started their initial runs from New York and Chicago on June 15, electrical impulses controlled by the Elgin Observatory flashed the starting signals direct to the conductors and engineers of the two trains. The engineers pulled the throttles and these modern giants set out on their record runs literally timed by the stars.

**"20th Sentury's" Veteran Engineer, Louis S. Wilson, Sets His B. W. Raymond Elgin to the Second by One of the Hermetically Sealed Clocks in the Elgin National Watch Company's Observatory at Elgin, Illinois.**

On the preceding day Engineer Wilson, who has seen more than a half century of railroad service, visited the Observatory at Elgin and saw how time was calculated from the stars by recording the rotation of the earth as it is shown from the meridian passage of designated stars across the field of a powerful telescope, and how this time is translated to sideral time and finally to mean solor time, which is used as a standard throughout the world.

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# Watch Crystal Firm Wins Suit On Trade-Mark

*Competitor Also Enjoined From Using Numbering System and Containers*

Harry Germanow and Julius Simon, co-partners in Germanow-Simon Machine Company, 408 St. Paul Street, are entitled to the exclusive use of their trade-mark, a certain type of container, trade-name and numbering system for watch crystals.

Supreme Court Justice Benjamin B. Cuningham yesterday rules in favor of the partners in their action to restrain Abraham A. Glazer, 149 Main Street East, from alleged unfair competition.

The plaintiffs since 1916 have been engaged in the manufacture and sale of unbreakable watch crystals, and their business has increased until now they are said to be the largest producers and distributors of such crystals in the United States. For many years they used as a trade-mark the capital letter "G" and the capital letter "S" separated by a dash, and in 1925 caused it to be registered in the United States Patent Office.

*Alleges Imitation*

They submitted proof in court that they sell cabinets with drawers designed to contain their different watch crystals. In connection with this they have developed a numbering system by which the retailer may readily select from the cabinet the particular type of crystal desired for any one of the various type of watches. They alleged that the defendant imitated trade-marks, names, crystals and the numbering system.

Justice Cunningham's decision follows in part:

"The defendant was engaged in the jewelery busines in Rochester under the name of Glazer Jewelry Company. In 1932 he filed a certificate to do business under the assumed names of G. A. S. Co. and Glazer & Son Co. The use of the name G. A. S. Co. was intended to imitate the trade-mark of plaintiffs, and the defendant should be enjoined from using the same.

"In 1932, the defendant commenced to manufacture unbreakable watch crystals. He placed such crystals in small paper envelopes similar to those used by plaintiffs and known to their trade, and the defendant should be enjoined from using such envelopes.

*Trade-Name Protected*

"The plaintiffs have designated their product as G-S Flexo and the defendant his product as Gasco. There is a phonetic similarity between the two names and the defendant will be enjoined from using such trade-name.

"The defendant has made use of the numbering system developed by plaintiffs and has requested retailers to make use of his imitation in the selection of unbreakable watch crystals. He will be enjoined from such practices.

"The defendant has attempted to induce employees of plaintiffs to disclose information relating to plaintiff's methods of the manufacture and sale of their goods. The defendant will be enjoined from further attempts of that nature."

Byron A. Johnson appeared for the plaintiffs.


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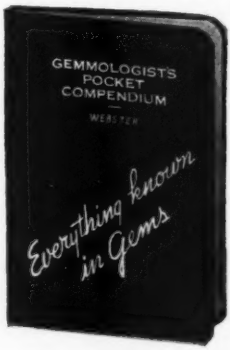


New—and Filled With Gem Facts

Realizing the increasing public interest in gems and the study of gems among retail jewelers, Henry Paulson & Co., 37 S Wabash Avenue, Chicago, have secured sole distribution rights for the United States of an unusually important book, the Gemologist's Compendium by R. Webster, F. G.A., with foreword by Dr. L. J. Spencer until recently curator of minerals at the British Museum.

The great amount of information it contains is all arranged for quick reference, the book is beautifully printed, and in spite of its compactness—it is made to fit the pocket—the type is generously sized. It is also bound in cloth, has rounded corners, and its 150 text pages are filled with gem facts every jeweler wants at his finger tips. The price is only $1.75.

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To our readers: We wish to call to your attention the reasen for elimination of the Organization Directory this month. There are so many new organizations added that a complete revision is necessary, and the list of all affiliated organizations will appear in the August number.

## How Eskimos Tell Time

"How do the Eskimos tell time?" was the inquiry made the other night of a man who has had considerable experience in North Greenland in connection with the Peary expeditions. He had just been telling something about the long arctic "day," with the sun circling round and round a short distance above the horizen, and the question was a natural one.

"They have two different methods," he replied, "according to the interval of time involved. For instance, if you are about to start on a journey and ask an Eskimo how long it will take, he will tell you 'three sleeps' or 'four sleeps,' corresponding to the number of days the trip will take, but he knows nothing about a day—only that every so often he has to stop and sleep. And fortunately, the Eskimo finds it convenient to sleep about once in twenty-four hours, so that his 'sleep' means practically a day.

"On the other hand, I remember seeing Peary dispatching an Eskimo one morning with a message to a near-by settlement, and the explorer kept pointing to the sun, which at the time stood immediately above a rocky eminence across the bay. I wondered what it was all about, and asked Peary.

"I want that fellow to be back here tomorrow at this time," he replied, "and the only way to tell him is to call his attention to the position of the sun. He knows that he is to return when the sun has gotten around to that point again."

"Sure enough, the next morning, when the sun had circled the horizon and was again above the point of rock, the Eskimo could be seen coming across the bay in his kavak."

## Life's Contrasts

When hope for us we think is gone,
These laws of Nature we should learn—
Night's darkest hour precedes the dawn,
And tides at lowest ebb will turn.
Life is a pendulum it seems
That swings impartially each way,
It always goes to two extremes,
But at neither does it stay.

In watching seasons of the year
We find they're like a pendulum;
When Winters are the most severe,
The warmest Summers always come.
And sunshine always follows rain,
Life's contrasts are in Nature seen,
For when the sun comes out again,
Her rain washed foliage is most green.

And there would be no growth at all
If any one condition lasted.
Sun and happiness would pall
Unless to rain and grief contrasted.
And so, as long as tides still turn,
Day follows night, sun follows rain.
Just that long will joy, we learn,
Always follow tears and pain.

(This poem was written by RETTA REVELL—Nellie Revell's daughter.)

Submitted by J. LeRoy, N. Y. City.

## Invented Stop Watch

The first stop watch was invented about 1800, but this early watch was not entirely practical. Edward Massey of London, 1772-1852, was one of the principal makers. These watches were also made in Switzerland during this period.

# SPECIAL NOTICES

Payable in advance.
Rates under all headings except "Situations Wanted," $1.50 for first 25 words. Additional words, 5c a word.
SITUATIONS WANTED, 75c for first 25 words. Additional words, 5c a word.
Heavy type, $2.50 for first 25 words. Additional words, 10c a word.
Name, address, initials and abbreviations count as words, and are charged for as part of the advertisement.
If answers are to be forwarded, postage must be enclosed.
Special notice forms close 30th of month.
Unless the advertiser instructs us to publish his name and address, all answers will be directed care THE AMERICAN HOROLOGIST.

## SITUATION WANTED

**Apprentice Watchmaker** — Elgin Trained, wishes permanent position as assistant watchmaker, sales and counter experience. References furnished. Address The American Horologist, Box No. 398.

**Junior Watchmaker**—Age 29, single, sober, no tobacco. Elgin Trained, position as assistant watchmaker; sales experience, plain engraver. Reference on request. Address The American Horologist, Box No.

**Certified Watchmaker,** engraving and jewelry repairing. 11 years' experience. Age 37, Married. Go anywhere. Geo. Gorham, 370 Hubbard Ave., Elgin, Illinois.

## FOR SALE

**For Sale:** A perfect specimen of a crystal. Weight, about one pound. Shape, cubical squarish. Color, red. Known by the name as "Ursa Minoris" or "Rhode Island." For further information address: Anthony Piotrowski, 208 N. Halsted Street, Chicago, Illinois.

## BLUEPRINTS

**Working drawings** for construction of wooden Columbus Clock consisting of a set of 15 blueprints for $3.25 postpaid. Address THE AMERICAN HOROLOGIST.

Working drawings for the complete construction of pinwheel movement clock consisting of eleven blue prints postpaid for $3.00 per set. Address The American Horologist.

**Working drawings** — For complete construction of Graham Dead Beat Escapement Clock, consisting of 11 blueprints, postpaid for $3.50 per set. Address The American Horologist.

**Watch Blue Prints,** showing the diagram and elevation of 16 size 25 jewel McIntyre Watch. One large print 42x27 inches. This is a beautiful blue print, postpaid for $1.00. Address The American Horologist.

## ADVERTISING MATERIAL

Send to Advertising Department National Headquarters for free samples showing prepared advertising material designed for newspaper, letter, cards and counter circulars, mats, plates, etc.

## Swarthchild Introduces New Watchmakers' Bench Rack

Swartchild & Company, Chicago, New York, Dallas, Atlanta and Boston is currently featuring a new innovation for the watchmaker.

This is a reduced size Bench Rack which watchmakers will affix directly to their benches, either at the back or on the side, and which will save every watchmaker many daily trips to his large general watch rack.

The specific purpose of this new Swartchild Bench Rack is the convenience to the watchmaker of having, at arm's length, those watches on which he is working or which he has just finished repairing—and of being able to conveniently check the timing of such watches without rising from his bench.

The rack is 18 inches wide and has hooks for 12 watches. These hooks are movable and will accommodate watches of any size. In addition the entire rack is nicely chromium plated and will prove an attractive accessory to any bench.

The price of this new device is only $2.95. Watchmakers desiring them should communicate with Swartchild & Company at any of their above mentioned locations.

## Slight Error

Big Ben, London's famous clock, was wrong by as much as a second, only five days last year.

---

It pays to be careful. A guy at an auction sale the other day got a beautiful grandfather's clock by merely scratching his ear.

---

The harder we study, the better we like to study.

# Nu Vigor

TRADE MARK

# MAINSPRINGS

**Completely guaranteed to be superior in every way**

- **Finest grade steel**
- **Accurately gauged**
- **Uniformly tempered**

Watchmakers, in increasing numbers everywhere, are using Nu Vigor MAINSPRINGS for all Swiss and American Watches because of their exceptional quality. Uniformity in temper insures accurate time-keeping without loss of resiliency during the life of the spring. Their consistent performance is not affected by temperature or climatic conditions.

The bevelled end piece on the Nu Vigor Swiss MAINSPRING anchors to the barrel hook without bending or filing.

Nu Vigor MAINSPRINGS are packed in individual moisture-proof envelopes. All models for Bulova, Gruen, Longines, etc. are clearly indicated on the envelopes.

**Sold thru Jobbers only**

**B. JADOW INC. NEW YORK**

*Sole Importers and Distributors*

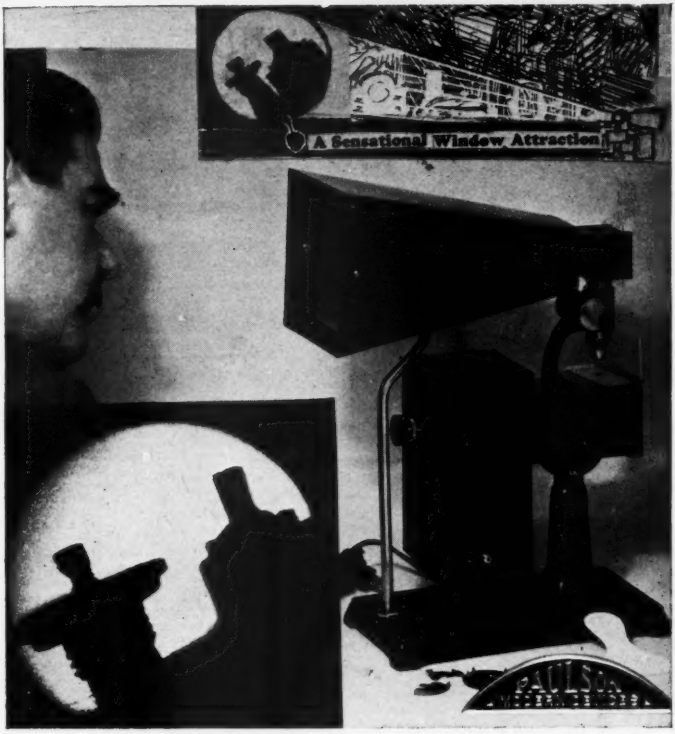
**41-43 MAIDEN LANE**

## D'ARCY OILS and PRODUCTS

Oils for Watches — Clocks . . . Chronometers
Bracelets - Baguettes — Electric, French, and others

"STRONGHOLD" Watch Crystal Cement
D'ARCY Dial Cleaning Solution
D'ARCY "CAPS" Watch Cleaning Compound

# NOW YOU SHOW THEM




*With the Sales Convincing Scientific*

# PAULSON HOROLOGICAL MICRO-PROJECTOR

**Brings Better Prices on Watch Repairing**

**PATENT PENDING**

### CONVINCING WINDOW DISPLAY

With this double value scientific instrument you not only have a convincing salesman but a wonderful window display as well. Can be used in your window with only electric lamp cost, a cost which can be figured only in pennies. Put this master window display to work for you.

### TO SHOW WATCH REPAIR CUSTOMERS

No more convincing argument can be presented to your customer than seeing for himself. The enlarged projection shows dirt on pinions, shows cracks in jewels, worn pivots, chipped pallet stones, all the essentials for good repair work but with which you usually have difficulty in convincing your customer. The watch job is yours with this convincing argument.

### REQUIRES SMALL SPACE

Only 9½x4¼x15¼" high. Comes to you all complete with projection lamp. Perfectly ground lens produce absolutely true enlargement. The ground glass screen is 4" square. Entire structure except the lens and screen are of metal black finished. No danger, nothing to get out of order. Can be used in window or show case.

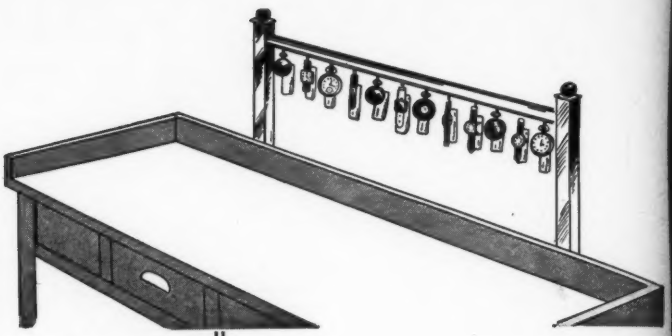
### ALSO USED FOR MEASURING

With the outfit comes specially prepared gauge for measuring jewels, pivots, through enlarged comparison, simple, easy to handle. This projector is sold exclusively by us under **patents pending.** The entire outfit is beautifully constructed, durable and guaranteed to give entire satisfaction.

**No. 11511 Paulson Horological Micro-projector, complete ready for use. Less 2% for cash..... $17.50**

## Henry Paulson & Co.

**37 So. Wabash Ave., Chicago, Ill.**



## A Swartchild Innovation

# A BENCH WATCH RACK

## A Progressive Idea

## A Convenience To Every Watchmaker

Here is a new idea, so clever that you will immediately "take to it." It is a miniature size rack for use on the watchmaker's bench. The purpose of it is to conveniently accommodate those watches which you are daily repairing. Like every watchmaker, you undoubtedly have several jobs which you are working on (or have just finished) and which you like to keep conveniently close at hand to watch and time. This little bench rack enables you to have directly before you such watches and saves you the time and trouble of going to your big rack every time you want to check one of these watches.

This little Swartchild bench rack is 18" wide, nicely chromium plated with ball-top supports and will accommodate as many as 12 watches.

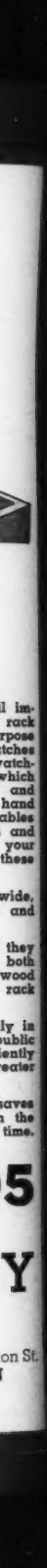
The hooks also represent an innovation since they are movable. Naturally they accommodate both wrist and pocket watches of any size. Two wood screws are supplied to permanently screw the rack to top back of your bench.

Most watchmakers will affix this rack directly in front of them, but if your bench is open to the public and unprotected, the rack is just as conveniently attached to the side of bench, providing greater safety.

This new Swartchild bench rack not only saves time but also keeps your bench top free from the completed jobs which you are still checking for time.

No. 50065. Swartchild Watchmaker's Bench Rack. Each ..... **$2.95**

# SWARTCHILD & COMPANY

**World's Largest Watchmakers' and Jewelers' Supply House**

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